Vol. 915 Number 3

OFFICIAL GAZETTE

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UNITED STATES PATENT OFFICE

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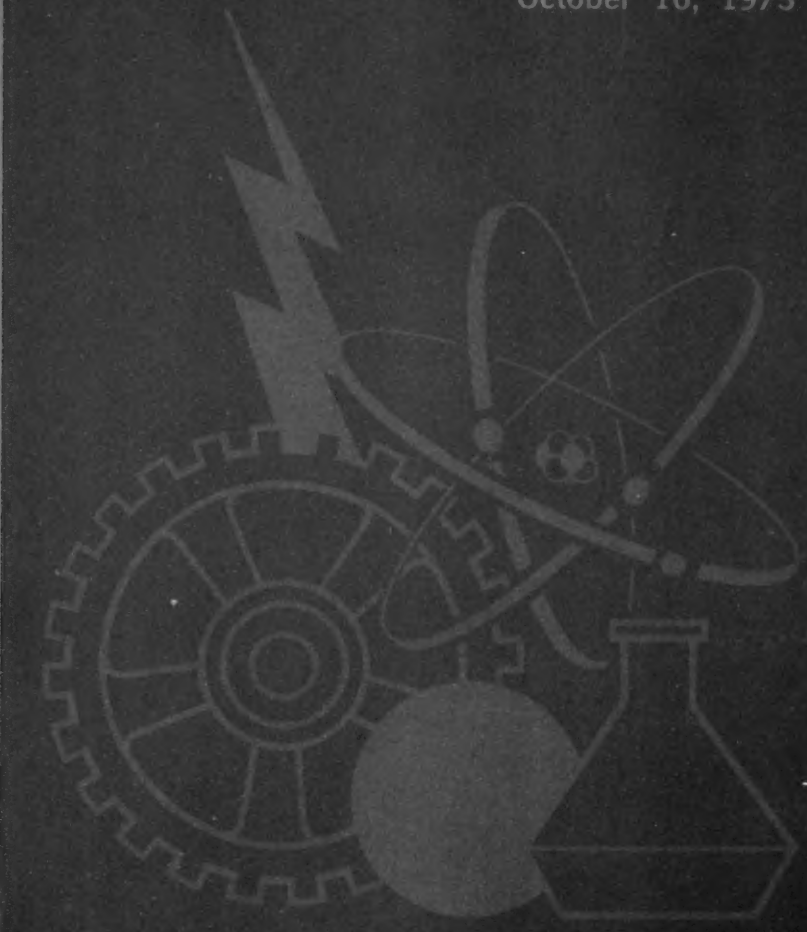
PATENTS

October 16, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

October 16, 1973 Volume 915 Number 3

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before Nov. 5, 1973.

Davis, Stephen B., E. R. Squibb & Sons, Inc., P.O. Box 4000 Princeton, N.J. 08540

Haller, Timothy J., % General Electric Co., Suite 505, 2001 Jefferson Davis Hwy., Arlington, Va. 22202.

Moran, Martin J., 2307 Lambeth Drive, Pittsburgh, Pa. 15241

Sokal, Allen M., Sughrue, Rothwell, Mion, Zinn & Macpeak, 1776 K St. NW., Washington, D.C. 20006

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,715,231, O. F. Marston, FLEXIBLE BUOYANT ARTICLE, filed Mar. 7, 1973, D.C., M.D.N.C. (Greensboro), Doc. C–90–G–73. *Oliver F. Marston* v. *The Telescope Folding Furniture Co., Inc.*

3,092,404, W. MacWilliam, PACKED SCREW THREADED GLAND TYPE TUBE COUPLING FOR THIN WALLED TUBING, filed Apr. 6, 1973, D.C., S.D. Ind. (Indianapolis), Doc. IP73–C–172, *Scovill Manufacturing Company* v. *Philco-Ford Corporation.*

3,149,431, M. B. Blish, SELF-ALIGNING NECK CARD LABEL, filed Apr. 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c855, *International Paper Company* v. *Matthew B. Blish.*

3,152,376, Boser and De Vito, SNAP FASTENER, filed May 17, 1972, D.C.N.J. (Camden), Doc. C. 863-72, *Plasti-Hook, Inc.* v. *Scovill Manufacturing Co.* Order of dismissal without prejudice, Mar. 29, 1973.

3,217,890, L. Maslow, DISH RACK; **3,283,915,** same, TRAY OR RACK ASSEMBLY, filed Oct. 24, 1968, D.C., S.D.N.Y., Doc. 68–C–4217, *Metropolitan Wire Goods Corporation* v. *The General Tire & Rubber Co.* Filed stipulation; order action is dismissed, Feb. 26, 1973.

3,250,205, R. R. Lambert, STRIP-TYPE AIR DIFFUSER; **3,406,623,** same, PLENUM AIR DIFFUSER ASSEMBLY, filed Mar. 23, 1973, D.C., E.D. Wis. (Milwaukee), Doc. 73–C–169, *Air Factors, Inc.* v. *Tempmaster Corp. and Edward Filkins, Inc.*

3,283,915. (See 3,217,890.)

3,303,938, A. Solomon, GARMENT RACK, filed Mar. 30, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73C431, *Archie Solomon* v. *Standard Equipment Division of American Pressed Steel.*

3,321,656, E. E. Sheldon, TELEVISION CAMERA TUBE WITH LEAD OXIDE SCREEN, filed Apr. 18, 1969, D.C., S.D.N.Y., Doc. 69–1597, *Philips Broadcast Equipment Corp.* v. *Edward Emanuel Sheldon.* Consent judgment: Ordered consolidated complaints are dismissed without prejudice, defendant's counterclaims are dismissed with prejudice. Defendant enjoined perpetually, Feb. 15, 1973.

3,337,899, J. M. Rentfrow, ROLLER TYPE PAINT DISPENSER; **3,702,739,** same, PAINT ROLLER, filed Apr. 4, 1973. D.C., N.D. Tex. (Dallas), Doc. CA–3–7032–E, *James M. Rentfrow* v. *Bruce A. Clark et al.*

3,350,688, Kasper and Billingsley, MATRIX CIRCUITRY CONTROLLED BY TIMING MODULES HAVING INDIVIDUAL TIME DURATION OUTPUTS; **3,532,990,** F. S. Kasper, CONTROL SYSTEMS FOR EFFECTING THE TIMED ACTUATION OF A CONTROLLED DEVICE AND METHODS THEREFOR; **3,593,308,** J. C. Fagan, PAINT SPRAY CONTROL SYSTEM; **3,646,521,** V. E. Porter, MULTILEVEL SPRAY CONTROL, filed Mar. 26, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c765, *Amtron, Inc.* v. *Nordson Corp. et al.*

3,368,843, D. F. Caldemeyer, CHAIR BASE; **3,371,958,** Caldemeyer, Caldemeyer, Mosier and Gates, COMBINATION RECLINING AND ROCKING CHAIR; **3,434,755,** Caldemeyer, Caldemeyer and Gates, same; **3,494,660,** Caldemeyer and Caldemeyer, RECLINING CHAIR STRUCTURE, filed Apr. 3, 1973. D.C., S.D. Ind. (Evansville), Doc. EV 73–C–23, *Flexsteel Industries, Inc.* v. *Daniel F. Caldemeyer and Lloyd O. Caldemeyer.*

3,371,958. (See 3,368,843.)

3,406,623. (See 3,250,205.)

3,434,755. (See 3,368,843.)

3,494,660. (See 3,368,843.)

3,532,990. (See 3,350,688.)

3,593,308. (See 3,350,688.)

3,646,521. (See 3,350,688.)

3,702,739. (See 3,337,899.)

Erratum

In the Patent Notices Section of the OFFICIAL GAZETTE of Mar. 27, 1973, vol. 908, page 784, the Patent Number 2,678,625 should be "2,678,265."

Certificates of Correction for the Week of Oct. 16, 1973

Re. 27,521	3,694,199	3,715,294	3,724,339
3,483,173	3,694,206	3,715,964	3,724,430
3,499,203	3,695,824	3,716,405	3,724,728
3,543,925	3,697,268	3,716,422	3,725,070
3,547,381	3,697,562	3,716,948	3,725,795
3,578,901	3,698,201	3,717,472	3,726,847
3,614,699	3,699,321	3,717,528	3,726,991
3,619,701	3,700,606	3,717,586	3,727,236
3,625,824	3,700,702	3,718,225	3,727,510
3,627,842	3,701,632	3,718,351	3,727,536
3,629,051	3,702,707	3,718,442	3,728,150
3,631,860	3,702,874	3,718,477	3,728,494
3,644,493	3,702,888	3,719,100	3,729,078
3,649,559	3,704,676	3,719,337	3,729,377
3,651,294	3,705,296	3,719,441	3,729,846
3,654,209	3,705,751	3,719,557	3,730,328
3,660,037	3,707,400	3,719,755	3,730,890
3,662,405	3,708,003	3,719,813	3,731,112
3,668,280	3,708,159	3,720,008	3,731,298
3,671,529	3,708,888	3,720,961	3,731,406
3,671,733	3,709,082	3,720,986	3,731,752
3,673,092	3,709,864	3,721,553	3,732,292
3,674,465	3,709,899	3,721,647	3,732,542
3,680,618	3,709,957	3,722,282	3,732,984
3,685,014	3,710,637	3,722,718	3,734,467
3,686,100	3,711,538	3,722,764	3,734,735
3,687,842	3,712,549	3,723,049	3,735,630
3,689,135	3,712,976	3,723,096	3,735,891
3,689,504	3,714,265	3,723,266	3,736,379
3,690,586	3,715,212	3,723,384	3,737,277
3,693,781	3,715,244	3,723,456	3,738,019
3,694,124	3,715,262	3,723,941	3,740,498

Errata

All reference to Design Patent Number 228,049 to Arthur G. Anthonsen, Huntington, and Benjamin Rubenstein and Samuel C. Schechter, Westbury, N.Y., for Lock Operated Stereo Tape Cartridge Display Case, appearing in the OFFICIAL GAZETTE of Aug. 7, 1973, should be deleted since no patent should have been granted.

All reference to Patent Number 3,759,365 to Theodore F. Aronson of Glen Cove, N.Y., for Feeding and Rectifying Apparatus and Method, appearing in the OFFICIAL GAZETTE of Sept. 18, 1973, should be deleted since no patent should have been granted.

Disclaimers

3,644,576.—*Eugene J. Sehm*, Akron, Ohio. IMPACT-RESISTANT RESINOUS BLENDS CONTAINING VINYL CHLORIDE POLYMER AND METHOD OF MAKING SAME. Patent dated Feb. 22, 1972. Disclaimer filed June 21, 1971, by the assignee, *The B. F. Goodrich Company*.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 4, 1989.

3,682,243.—*Robert F. Bauer*, Whittier, Calif., *Robert C. McNeill*, Sunset, Utah, and *Jerry T. Ledbetter*, Whittier, Calif. UNDERWATER WELLS. Patent dated Aug. 8, 1972. Disclaimer filed Apr. 7, 1971, by the assignee, *Shell Oil Company*.

Hereby disclaims the portion of the term of the patent subsequent to Jan. 12, 1988.

3,705,117.—*Silvio Vargiu* and *Mario Pitzalis*, Milan, and *Pierluigi Abruzzi*, Bergamo, Italy. PROCESS FOR THE MANUFACTURE OF LIGHT BUILDING ELEMENTS. Patent dated Dec. 5, 1972. Disclaimer filed July 18, 1972, by the assignee, *Societa Italiana Resine S.p.A.*

Hereby disclaims the portion of the term of the patent subsequent to Dec. 5, 1989.

3,705,907.—*Franz Troxler*, Bottmingen, Switzerland. 4-(2-HYDROXY - 3 - AMINOPROPOXY)-INDOLE DERIVATIVES. Patent dated Dec. 12, 1972. Disclaimer filed Oct. 16, 1972, by the assignee, *Sandoz Ltd.*

Hereby disclaims the portion of the term of the patent subsequent to Oct. 3, 1989.

3,719,642.—*Thomas Albert Johnson*, Newark, Del. INTERMEDIATES FOR P-BENZAMIDE POLYMERS. Patent dated Mar. 6, 1973. Disclaimer filed July 12, 1972, by the assignee, *E. I. du Pont de Nemours and Company*.

Hereby disclaims the portion of the term of the patent subsequent to Oct. 17, 1989.

3,750,389.—*David S. Breed*, Boonton Township, N.J. LIQUID ANNULAR ORIFICE DASHPOT TIMER WITH INERTIAL EFFECTS. Patent dated Aug. 7, 1973. Disclaimer filed Apr. 3, 1973, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 16, 1988.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of Patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters; NASA—Code GP–2, Washington, D.C. 20546.

Patent application 306,980. Telemetry Processor. Filed Nov. 15, 1972. PC $6/MF $1.45.

Patent application 361,666. Integrable Power Gyrator. Filed May 18, 1973. PC $3.25/MF $1.45.

Patent 3,728,861. Ion Thruster With a Combination Keeper Electrode and Electron Baffle. Filed Apr. 24, 1973. Not available NTIS.

Patent 3,729,343. Thermocouple Tape. Filed Jan. 8, 1971. Not available NTIS.

Patent 3,729,676. Ratemeter. Filed July 13, 1971. Not available NTIS.

Patent 3,729,743. Collapsible Structure for an Antenna Reflector. Filed Oct. 26, 1971. Not available NTIS.

Patent 3,729,935. Solid Propellant Rocket Motor. Filed May 28, 1971. Not available NTIS.

Patent 3,732,040. Pump for Delivering Heated Fluids. Filed Mar. 2, 1971. Not available NTIS.

Patent 3,732,158. Method and Apparatus for Sputtering Utilizing an Apertured Electrode and a Pulsed Substrate Bias. Filed Jan. 14, 1971. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 25,005. Gradient Armor System. Filed Apr. 2, 1970. PC $3/MF $0.95.

Patent application 108,826. Multiple Lens Camera for Obtaining Time-Sequential Images. Filed Jan. 22, 1971. PC $3/MF $0.95.

Patent application 123,362. Method for Production of Uniform Microspheres. Filed Mar. 11, 1971. PC $3/MF $0.95.

Patent application 151,111. Superconductive Material and Method of Manufacturing. Filed June 8, 1971. PC $3/MF $0.95.

Patent application 155,012. Hybrid Laser Plasma Target—Neutral Beam Injection Fusion System. Filed June 21, 1971. PC $3.50/MF $0.95.

Patent application 178,988. Ultrasonic Void Fraction Detector. Filed Sept. 9, 1971. PC $3/MF $0.95.

Patent application 203,248. Improved Loading Disk for Photometric Analyzer of Rotary Curvette Type. Filed Nov. 30, 1970. PC $3/MF $0.95.

Patent application 206,468. Improved Rotor for Multistation Photometric Anaylzer. Filed Dec. 9, 1971. PC $3/MF $0.95.

Patent application 215,159. A Method for Dispersing Cri 3+ Ions Impregnated in Silica. Filed Jan. 3, 1972. PC $3/MF $0.95.

Patent application 216,947. Porous Metal Insulator Sandwich Membrane. Filed Jan. 11, 1972. PC $3/MF $0.95.

Patent application 227,172. Improved Pulse Processing System. Filed Feb. 17, 1972. PC $3/MF $0.95.

Patent application 228,676. Irrigation System. Filed Feb. 23, 1972. PC $3/MF $0.95.

Patent application 260,237. Method for Preparation of Biocompatible and Biofunctional Materials and Product Thereof. Filed June 6, 1972. PC $3.25/MF $0.95.

Patent application 265,049. Computer Generated Optical Sound Tracks. Filed June 21, 1972. PC $3/MF $0.95.

Patent application 277,192. Dynamic Multistation Photometric Analyzer for Serological Testing. Filed Aug. 2, 1972. PC $3/MF $0.95.

Patent application 282,814. Dynamic Multistation Photometer-Fluorometer. Filed Aug. 22, 1972. PC $3/MF $0.95.

Patent application 288,801. Zeeman Effect Absorption Spectrometer. Filed Sept. 13, 1972. PC $3.25/MF $0.95.

Patent application 316,628. Portable Dynamic Multistation Photometer Fluorometer. Filed Dec. 19, 1972. PC $3/MF $0.95.

Patent 3,371,558. Rotary Drilling Device. Filed Feb. 15, 1966. Patented Mar. 5, 1968. Not available NTIS.

Patent 3,673,872. Cryogenic Sound Supported Inertial Reference. Filed Feb. 1, 1966. Patented July 4, 1972. Not available NTIS.

Patent 3,693,731. Method and Apparatus for Tunneling by Melting. Filed Jan. 8, 1971. Patented Sept. 26, 1972. Not available NTIS.

Patent 3,695,384. Non-Meniscus Forming Orifices. Filed Sept. 25, Patented Oct. 3, 1972. Not available NTIS.

Patent 3,697,259. Fluxless Aluminum Brazing Composition. Filed Oct. 2, 1970. Patented Oct. 10, 1972. Not available NTIS.

Patent 3,699,474. Multiple Beam Laser System. Filed Nov. 20, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,701,080. Miniature Coaxial Cable Connector. Filed June 2, 1971. Patented Oct. 24, 1972. Not available NTIS.

Patent 3,702,279. Fibrous Thermal Insulation and Method for Preparing Same. Filed Apr. 7, 1971. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,450. Printed Circuit Steering Coils. Filed May 11, 1971. Patented Nov. 7, 1972. Not available NTIS.

Patent 3,702,589. Bimetallic Temperature Sensing Device. Filed Feb. 8, 1968. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,620. Actuator System. Filed Aug. 10, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,724. Ferroelectric Ceramic Plate Electrooptical Light Scattering Device and Method. Filed Oct. 13, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,932. Melting Cryogen Cooling for Radiation Logging Probe. Filed Apr. 15, 1971. Patented Nov. 14, 1972. Not available NTIS.

Patent 3,702,961. Demand Regulated DC to DC Power Supply. Filed Mar. 19, 1971. Patented November 14, 1972. Not available NTIS.

Patent 3,703,208. Reduction of Radioactive Gas Contamination of Nuclear Detonations in Geological Formations. Filed Jan. 22, 1971. Patented Nov. 21, 1972. Not available NTIS.

Patent 3,703,405. Vapor Deposition of Rhenium and Rhenium-Tungsten Alloy Coatings. Filed Oct. 27, 1970. Patented Nov. 21, 1972. Not available NTIS.

Patent 3,707,188. Non Collapse Stemming of Casing Subjected to Explosive Effects. Filed Apr. 27, 1971. Patented Dec. 26, 1972. Not available NTIS.

Patent 3,723,703. Laser Energized Plasma Source. Filed Feb. 8, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,706,029. Rotators to Resolve Each Parameter. Filed Nov. 16, 1971. Patented Dec. 12, 1972. Not available NTIS.

Patent 3,707,869. Airborne Isokine IC Sampler. Filed June 9, 1971. Patented Jan. 2, 1973. Not available NTIS.

Patent 3,723,730. Multiple Ion Source Array. Filed Nov. 30, 1971. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,718,583. Method for the Concentration of Heavy Metal Cations Using Ion Selective Membranes. Filed Nov. 29, 1971. Patented Feb. 27, 1973. Not available NTIS.

Patent 3,723,594. Rare Earth Removal from Americium Oxide. Filed May 18, 1972. Patented Mar. 27, 1973. Not available NTIS.

Patent 3,723,741. Method for Effecting Nuclear Polarization of a Beam of Atoms. Filed Sept. 1, 1971. Patented Mar. 27, 1973. Not available NTIS.

[FR Doc. 73-19872; Filed 9-18-73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF SEPTEMBER 29, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-13-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-02-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Acting Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-07-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director... Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director.. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	2-21-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-15-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-29-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	1-12-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. BUCHLER, Acting Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	12-04-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	9-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-07-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-13-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-13-72

Expiration of patents: The patents within the range of numbers indicated below expire during October 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,764,758 to 2,769,171, inclusive
Plant Patents..... Numbers 1,522 to 1,525, inclusive

REISSUES

OCTOBER 16, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

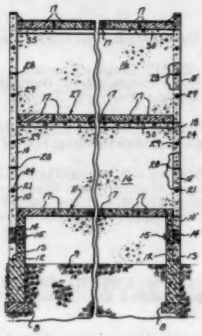
27,783
BUILDING SYSTEMS

Howard A. Lorenz, 2433 N. 111th St., Milwaukee, Wis. 53226; Robert H. Nagy, 1720 Arrowhead Court, Brookfield, Wis. 53005; and Ingvar Schousboe, 2104 S. Lynn St., Urbana, Ill. 61801

Original No. 3,535,841, dated Oct. 27, 1970, Ser. No. 805,458, Mar. 10, 1969. Application for reissue Jan. 14, 1972, Ser. No. 217,982

Int. Cl. E04b *1/04, 5/02;* E04h *1/04*

U.S. Cl. 52—236 12 Claims



The building system employs preformed upright erection elements, preferably of precast concrete, forming outer wall portions which extend from halfway below a floor to halfway between floors thereabove, presenting side edges against which the end portions of relatively long preformed structural walls of full height are swung and connected, whereby the usual need for temporary support for said structural walls, after they have been lowered into position by a crane, is eliminated. Other like erection elements for the next floor are supported endwise on the upper ends of the first erection elements and secured to upper portions of the structural walls to project halfway above the next floor.

27,784
MASTER CYLINDER FOR HYDRAULIC BRAKING SYSTEM

Chiaki Ochini, Kariya, and Takashi Fujii, Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

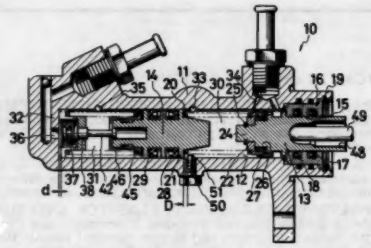
Original No. 3,662,552, dated May 16, 1972, Ser. No. 79,757, Oct. 12, 1970. Application for reissue Nov. 1, 1972, Ser. No. 302,892

Claims priority, application Japan, Oct. 18, 1969, 44/83,507

Int. Cl. F15b *7/08*

U.S. Cl. 60—54.6 E 4 Claims

A master cylinder for hydraulic braking system of an automotive vehicle comprising a hydraulic piston slidably fitted in the cylinder bore, a valve member operatively connected to the piston and normally spaced from a reservoir inlet of the master cylinder for controlling fluid communication therethrough, a stopper bolt normally spaced from the piston for limiting the most retracted position



thereof. When residual hydraulic pressure remains within the master cylinder after the brake has been released, the piston is immediately shifted to its most retracted position due to residual pressure whereby any residual hydraulic pressure is released to the reservoir.

27,785
LIGHTWEIGHT PRESTRESSED STRUCTURAL CONCRETE MEMBER AND METHOD FOR MANUFACTURING THE SAME

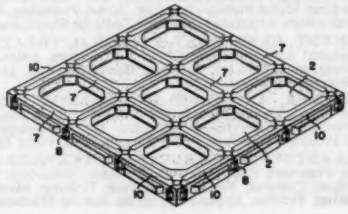
Hideya Kobayashi, 14–14, 1-chome Nagaski, Toshima-ku, Tokyo, Japan

Original No. 3,501,882, dated Mar. 24, 1970, Ser. No. 695,967, Jan. 5, 1968. Application for reissue May 21, 1971, Ser. No. 142,789

Claims priority, application Japan, Jan. 12, 1967, 42/1,952; May 9, 1967, 42/28,886

Int. Cl. E04b *2/10;* E04c *3/10, 3/22*

U.S. Cl. 52—228 5 Claims



A lightweight prestressed structural concrete member comprising a plurality of precast rectangular concrete blocks arranged in side-by-side relation, each of said blocks having at least one elongated recess along at least

one of its peripheral edges so as to form an elongated gap between two adjacent blocks, said gap being filled with concrete material after stretching within said gap at least one wire of high tensile strength with a predetermined tension, whereby the blocks and the concrete material filling said gap are subjected to pre-compression.

27,786

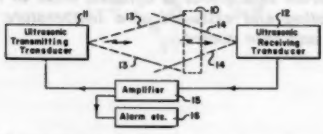
DETECTION APPARATUS

Wilfred Roth, 185 S. Cove Road, Burlington, Vt. 05401

Original No. 3,065,455, dated Nov. 20, 1962, Ser. No. 765,855, Oct. 7, 1958. Application for reissue Nov. 23, 1970, Ser. No. 92,335

Int. Cl. G08b *13/16*

U.S. Cl. 340—3 E 22 Claims



Ultrasonic detection apparatus for detecting the presence or absence of an object which comprises spaced ultrasonic transmitting and receiving transducers connected with an amplifier to form a regenerative feedback loop adapted to produce continuous-wave oscillations when the path between the spaced transducers is in an acoustically transmitting condition, said continuous-wave oscillations ceasing when the path is in its nonacoustically transmitting condition, and means connected to the amplifier to indicate the presence or absence of said oscillations. The transducers and amplifier have a relatively narrow passband for the regenerative loop oscillations, the amplifier gain and said narrow passband being correlated to maintain a closed loop power gain of at least unity throughout a variation of c/L which produces at least two consecutive one-wavelength changes in the number of acoustic wavelengths between the transducers when the path therebetween is in its acoustically transmitting condition, where c is the velocity of propagation of the ultrasonic energy and L is the path length between the transducers.

27,787

DUNNAGE BAG

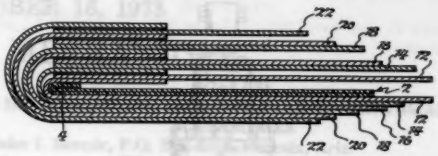
Carlton F. Evans, Warwick, N.Y., assignor to International Paper Co., New York, N.Y.

Original No. 3,506,143, dated Apr. 14, 1970, Ser. No. 712,858, Mar. 13, 1968. Application for reissue Apr. 6, 1972, Ser. No. 241,852

Int. Cl. B65g *1/14*

U.S. Cl. 214—10.5 D 9 Claims

An inflatable and disposable dunnage bag having an air-tight bladder enclosed in a multi-ply container folded along parallel fold lines so that the bag, when not inflated, is flat with a back and front wall, the plies in the front wall of the multi-ply container and the plies in the back wall being joined to each other by flaps extending from the end of the plies in one of the walls and beyond the end of the plies in the other of the walls and being folded over the end of the [containr] *container* and the



airtight bladder and secured to the plies in the other of the container walls.

27,788

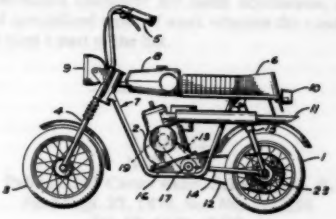
MOTORBIKE

David W. Wendt, Janesville, Wis. 53545

Original No. 3,517,764, dated June 30, 1970, Ser. No. 774,857, Nov. 12, 1968. Application for reissue June 1, 1972, Ser. No. 258,828

Int. Cl. B02d *61/02*

U.S. Cl. 180—33 R 13 Claims



A motorbike, operable with either direct chain drive or jackshaft chain drive, includes a one-piece engine mount fixed on the bike frame and inclined from horizontal about twenty degrees to thereby tilt the engine forwardly, permitting a low, compact bike frame design and use of a conventional industrial engine. The mount is slotted for adjusting the engine thereon to obtain chain adjustment. The mount is bored to provide bearing support for the jackshaft. An opening in the mount passes a chain therethrough. The mount has slots and holes therein for connecting a swing arm H-frame thereto, the slots providing a second chain adjustment with a jackshaft drive. The H-frame is reversible for use with either direct drive or jackshaft drive. Rear shock absorbers connect the upper portion of the bike frame to the rear wheel axle.

27,789

GATE VALVE

Cassius L. Tillman III, P.O. Box 343, Peters Road, Harvey, La. 70058

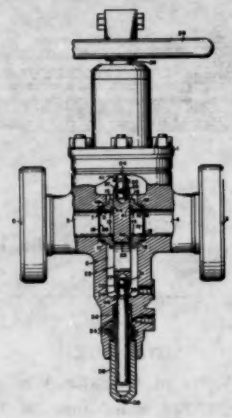
Original No. 3,533,598, dated Oct. 13, 1970, Ser. No. 771,120, Oct. 28, 1968, which is a continuation-in-part of abandoned application Ser. No. 617,899, Feb. 23, 1967. Application for reissue Apr. 19, 1972, Ser. No. 245,668

Int. Cl. F16k *3/314*

U.S. Cl. 251—327 12 Claims

A gate type valve has shiftable seals under pressure in recesses of the ports against either side of the gate. The

gate is loosely pin-connected to a drive shaft at the top and to a guide shaft at the bottom to provide for lateral



movement of the gate relative to the ports, all of which tends to equalize pressures between the seals and gate. Diameter interference between the seals and recesses permits a degree of deflection under stress within the elastic limit of the seals and valve body which provides a constant sealing pressure. Abutments between the seals and recesses limit the stress to a degree within such elastic limit.

27,790

PROTEIN FOOD PRODUCT AND PROCESS

Irving I. Rusoff, Park Ridge, N.J., and William J. Ohan and Calvin L. Long, New City, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Original No. 3,047,395, dated July 31, 1962, Ser. No. 40,989, June 15, 1960. Application for reissue Jan. 19, 1972, Ser. No. 219,182

Int. Cl. A23j

U.S. Cl. 99—14 **3 Claims**

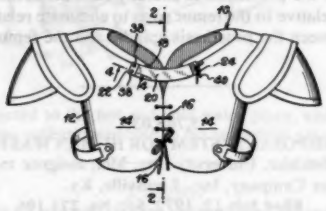
A meat replacement is prepared employing protein containing a sufficient concentration of denaturable and undenatured protein molecules by denaturing the protein source rapidly in less than 5 minutes in a continuous reactor wherein said source is agitated while in heat exchange relation and extruded at a temperature of 300 to 400° F. and then cooled.

PATENTS

GRANTED OCTOBER 16, 1973

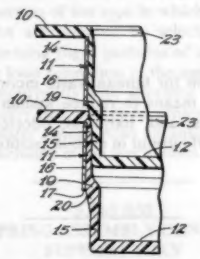
GENERAL AND MECHANICAL

3,765,029
ATHLETIC PROTECTIVE DEVICE
Joseph C. Germain, 59 Robins Pl., Metuchen, N.J.
Filed July 28, 1972, Ser. No. 276,023
Int. Cl. A41d *13/00*
U.S. Cl. 2—2 **7 Claims**



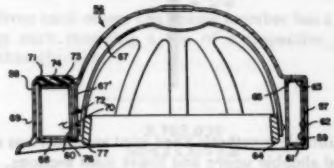
A head restraining device for use in connection with an athletic shoulder pad arrangement to protect an athlete against neck injury resulting from forward and downward movement of the head of the athlete beyond a predetermined lowered position.

3,765,030
NESTABLE PLASTIC HAT WITH HEAD SIZE ADJUSTMENT
Engelbert J. Peham, St. Paul, Minn., assignor to Peham Plastics Inc., Ramsey, Minn.
Filed Feb. 18, 1971, Ser. No. 116,524
Int. Cl. A42b *1/14, 1/22*
U.S. Cl. 2—183 **4 Claims**



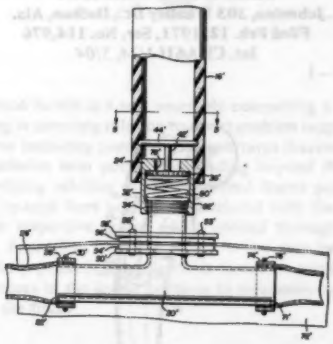
A plastic simulation of a skimmer hat is provided with a generally flat brim, a riser, and a crown generally parallel to the brim. The riser includes a lower portion of generally vertical inside and outside form, and an inwardly offset upper rim portion of generally vertical form. The inside surface of the lower riser portion is of proper dimensions to fit the outside surface of the upper riser portion of an identical hat.

3,765,031
HAT EMBODYING MEANS FOR CONTAINING SMALL ACCESSORIES
John I. Beresic, P.O. Box 5768, Phoenix, Ariz.
Continuation-in-part of Ser. No. 169,763, Aug. 6, 1971. This application Dec. 2, 1971, Ser. No. 203,986
Int. Cl. A42b *1/24*
U.S. Cl. 2—185 R **12 Claims**



A hat-mounted container for small accessories usable in sports and specialized types of work wherein the container fits around at least a part of the hat.

3,765,032
IMPLANT
James R. Palma, 1502 Curry Road, Schenectady, N.Y.
Filed Sept. 27, 1972, Ser. No. 292,654
Int. Cl. A61b *19/00*
U.S. Cl. 3—1 **18 Claims**

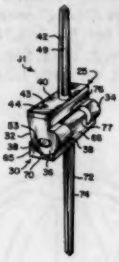


An implant device including a tube for connection at one end thereof to a blood vessel under the skin of a patient, with an opposite end of the tube projecting through the skin, and a valve at the opposite end of the tube for selectively blocking and passing blood. The tube is preferably affixed to the skin with fastening means. One embodiment of the tube is an elbow, and another embodiment has a T configuration.

3,765,033
PROSTHETIC KNEE JOINT ASSEMBLY WITH MUTUALLY SLIDABLE AND ROLLABLE JOINT SECTIONS

Donald D. Goldberg, 184-52 Tudor Rd., Jamaica, N.Y., and Stanley R. Rosen, Geraldine Pl., Spring Valley, N.Y.

Filed Jan. 19, 1971, Ser. No. 107,627
Int. Cl. A61f *1/24, 1/04, 1/08*
U.S. Cl. 3—1 8 Claims



An implantable prosthetic knee joint assembly has mutually rollable and slidable upper and lower joint sections. A single retainer pin in an oversize bore or a link and two retainer pins in oversize bores assist muscles and tissues to prevent separation of the joint sections after implantation in a leg. The retainer pins are not weight bearing during leg extension and leg flexure. One joint section has a resilient shock absorbing plastic bearing member. The bearing member of the other joint section may be made of metal. Both bearing members have contacting, smooth, substantially frictionless bearing surfaces. Sufficient free play is provided by the mountings of the retainer pins in oversize bores to permit the weight bearing members to contact each other rollably and slidably when the leg flexes and when it is extended. The joint sections have outwardly extending shanks adapted for securement in the thigh and calf of a person's leg. The bearing members are shaped so that articulation of the joint sections closely simulates human knee joint action.

3,765,034
FEMORAL HIP PROSTHESIS WITH POSITIONING AND DRILL GUIDE ASSEMBLY

Furnie W. Johnston, 303 Whatley Dr., Dothan, Ala.

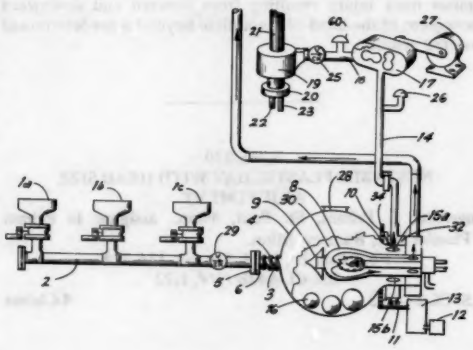
Filed Feb. 12, 1971, Ser. No. 114,976
Int. Cl. A61f *1/24, 5/04*
U.S. Cl. 3—1 2 Claims

A hip joint prosthesis of generally conventional configuration in that it includes an elongated tapered spindle curving slightly laterally at its major dimension end with the latter including a partial spherical head for universal engagement in a pelvis mounted socket provided therefor. The prosthesis departs from the conventional prosthesis or similar apparatus in that the spindle is provided with longitudinally spaced and transversely extending apertures and one side of the head is provided with laterally outwardly opening parallel bores. A combined jig and drill guide is also provided and includes a plurality of locating pins telescopingly receivable in the bores and sleeve portions supported in fixed relation relative to the locating pins aligned with the apertures when the guide has its locating pins disposed in the bores. The spindle is first driven into the medullary cavity and thereafter the guide is positioned alongside the femur with the locating pins received in the bores. Thereafter, a suitable drill may be inserted through and guided by the sleeve portions for drilling bores in the femur aligned with the apertures formed in the spindle disposed in the medullary cavity. After removal of the drill guide suitable threaded fasteners may be threaded through the bores formed in the femur and the apertures formed in the spindle of the prosthesis to thereby lock the spindle in fixed relation relative to the femur so as to eliminate relative movement between the prosthesis spindle and the femur.

3,765,035
DISPOSAL SYSTEM FOR HUMAN WASTE

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed July 12, 1972, Ser. No. 271,106
Int. Cl. A47k *11/02*
U.S. Cl. 4—131 11 Claims



A disposal system for human waste incorporating vacuum and heat emitting means to reduce human waste to sterile, bacteria free gases; and, harmless, odorless powders. The system is particularly useful in mobile facilities, such as boats, ships, and the like.

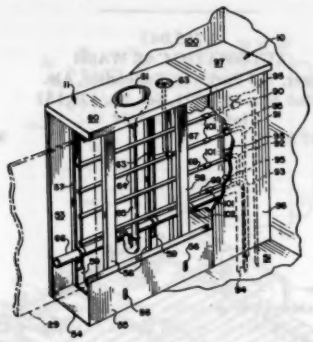
3,765,036
MODULAR LABORATORY CABINETS

Donald P. Dykstra, Des Plaines, Ill., assignor to Portable Laboratories, Inc., Chicago, Ill.

Filed Sept. 9, 1971, Ser. No. 179,070
Int. Cl. E03c *1/04, 1/328, 1/33*
U.S. Cl. 4—192 5 Claims

An assemblage of modular units are adapted to be positioned along a wall. Each of the modular units has piping at predetermined locations within the enclosure defined by the unit. The ends of the units are open and the piping extends approximately to the end of the unit where it can be coupled to

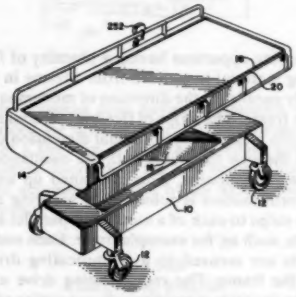
the corresponding piping of another unit. Different units have different fixtures thereon as, for example, one unit has a faucet connected to the hot and cold water pipes, while another unit has gas outlets connected to the respective gas pipes, etc.



3,765,037
APPARATUS FOR TRANSFERRING OBJECTS

Albert Dunkin, South Norwalk, Conn., assignor to Diamondhead Corporation, Mountainside, N.J.

Filed Apr. 5, 1972, Ser. No. 241,111
Int. Cl. A61g *1/02*; F16h *7/18*
U.S. Cl. 5—81 R 39 Claims



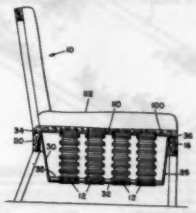
An improved belt drive and control mechanism for an object transfer apparatus of the type in which different phases of transfer operation are effected by selective linear travel in transfer apron forming flight portions of an endless belt. The flight length of a loop formation in the apron forming endless belt is varied concurrently with alternate energization of primary and secondary belt brakes to achieve the desired flight travel in the transfer apron. Also an automatic belt tracking arrangement is included in the mechanism.

3,765,038
PLASTIC SPRING ASSEMBLY CONNECTED TO A SUPPORT TRAY

William R. Curtis, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed May 17, 1972, Ser. No. 254,267
Int. Cl. A47c *7/02*
U.S. Cl. 5—351 5 Claims

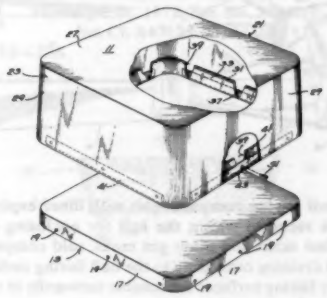
Corrugated plastic springs are substituted for metal coil springs in a chair, sofa, or the like. An annular flange is at the bottom of the spring and has a radial slot therein. A base tray support has a plurality of openings for receiving a respective spring therein. Each opening has a radial slot merging therein-to. One may insert the flange into the base tray slot and insert the edge of an opening into the slot on the flange and rotate the spring until the entire flange has proceeded under the base tray to provide a connection between the spring and base tray. A flexible spacer member is provided to keep the springs spaced from each other. The spacer member has a plurality of openings each receiving a top of a respective one of the springs therethrough.



3,765,039
SEAT COVER

Robert Ewoldt, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 29, 1971, Ser. No. 167,201
Int. Cl. A47c *31/10*
U.S. Cl. 5—353.1 1 Claim



Disclosed herein is a seat assembly comprising a seat cover extending in covering relation to a seat cushion supported on a seat frame including portions with apertures therein. The seat cover includes hem portions extending beyond the cushion into overlying relation to the apertured frame portions and defining spaced hem pockets. Associated with the hem portions are respective straps which extend through the hem pockets. Extending from the straps in the area between the spaced hem pockets are releasable fasteners projecting into the apertures in the frame portions to releasably connect the cover to the frame.

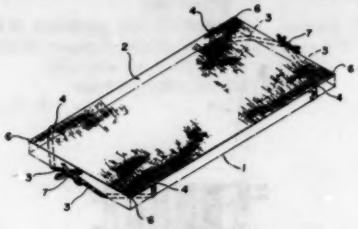
3,765,040
DISPOSABLE COT SHEET

Stephen A. Holstein, Pittsburgh, Pa.

Filed May 26, 1972, Ser. No. 257,360
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 R 1 Claim

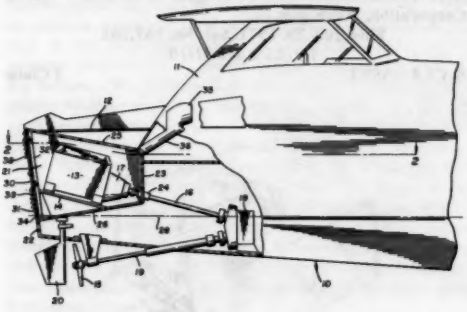
This invention relates to a disposable cot sheet made of spun bonded olefin. The sheet has a pair of tie strips on each

side and a pair of loops on each end for tieing the sheet onto a



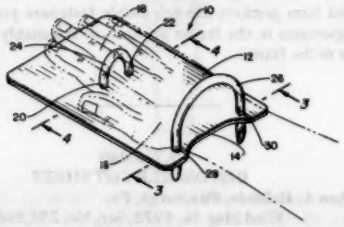
cot to provide a fitted sheet.

3,765,041
EXPLOSION-SAFE BOAT HULL CONSTRUCTION
John F. Morse, 1699 Hines Hill Road, Hudson, Ohio
Filed July 21, 1971, Ser. No. 164,603
Int. Cl. B63b *3/00, 3/56*
U.S. Cl. 9—6 **4 Claims**



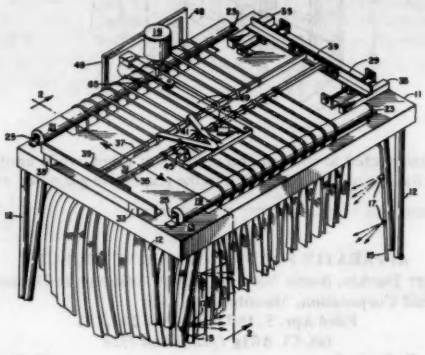
A boat hull having compartments with inner explosion-resistant walls recessed within the hull for enclosing engines, fuel lines, fuel tanks and other gas tanks, said compartments venting and draining outwardly to the hull fairing surfaces and having outer fairing surfaces detachable outwardly in response to internal explosions within said compartments.

3,765,042
SWIM TRAINING PADDLE
Anthony James Montrella, P. O. Box K, Lakewood, Calif.
Filed Aug. 24, 1972, Ser. No. 283,321
Int. Cl. A63b *31/02*
U.S. Cl. 9—307 **5 Claims**



A paddle to assist in the training of swimmers wherein the base of the paddle is formed of rigid sheet material in a substantially rectangular configuration, the aft edge of the paddle being relieved to unhinder the pivoting of the swimmer's hand about the wrist, the hand of the swimmer being fixedly located upon the paddle by a wrist band and a center finger band.

3,765,043
AUTOMATIC CAR WASH
Jerome M. Lesser, 713 Parkway, Fultondale, Ala.
Filed Apr. 30, 1971, Ser. No. 139,151
Int. Cl. B60s *3/04*
U.S. Cl. 15—97 R **9 Claims**

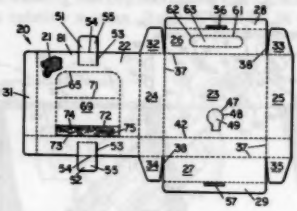


A car washing apparatus having a plurality of flexible strips of scrubbing material suspended from a frame in rows aligned substantially parallel to the direction of movement of a vehicle through the frame. The strips of flexible material are oscillated back and forth along the longitudinal dimension of the vehicle as it passes through the frame with the oscillations having an up and down component. This combined up and down and back and forth motion is achieved by securing a plurality of the flexible strips to each of a number of parallel aligned, flexible supports, such as, for example, rope. Each end of the flexible supports are secured to a reciprocating drive arm supported by the frame. The reciprocating drive arm pulls the flexible strip supports over idler rollers positioned at each end of the frame as it moves back and forth, thereby causing the flexible strip material to oscillate back and forth. The strip material also oscillates up and down since the reciprocating arm pulls the flexible strip supports upward over each idler roller once each cycle. The longitudinally disposed strips insure a thorough scrubbing of the vehicle being washed for a substantial portion of the time the vehicle is within the frame of the car wash.

3,765,044
FOLDABLE CONTAINER, LITTER BAG, DUST PAN, BRUSH AND BLANK THEREFOR
Frank T. Hanahan, 17 Abbott Ln., Chelmsford, and John H. Tortorella, 189 Tremont St., Malden, both of Mass.
Filed Dec. 2, 1971, Ser. No. 204,276
Int. Cl. A47l *13/52*; **B65d** *5/02*
U.S. Cl. 15—104.8 **10 Claims**

A folding carton of rectangular section is erectable from a one-piece blank of self-supporting sheet material, the minor portion being removable on a tear line to form the major portion as an open-topped, rectangular litter bag. A section of the front panel of the litter bag is removable on a tear line to form a doubled scraper and a large punch-out area in the bottom

panel forms a hand grip to convert the litter bag into a dust pan with an overhanging rim and viewing opening. A strip of

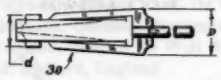


fibrous felt-like material is adhered to the blank along the edge of the scraper to sweep up dust particles.

3,765,045
FIRE ARMS CLEANING TOOL

Frank P. Schneider, 2853 Janet Ave., North Bellmore, and Roger L. Munz, P.O. Box 229A, Jamesport, both of N.Y.

Filed Sept. 20, 1971, Ser. No. 181,890
Int. Cl. F41c *31/00*; B08b *9/02*
U.S. Cl. 15—104.18 **4 Claims**

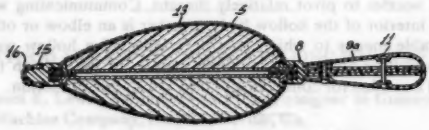


A rotatable scraping tool having a plurality of scraping edges is provided for removing built-up carbon deposits from the interior of a fire arm. The scraping edges normally converge to facilitate insertion of the tool and are displaced outwardly to the scraping position by an axially movable plug having cam means.

3,765,046
CLEANING BRUSH

Teruya Tsuruzawa, Osaka, Japan, assignor to Nippon Seal Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 820,119, April 29, 1969, Pat. No. 3,648,318. This application Dec. 22, 1971, Ser. No. 210,858
Int. Cl. A46b *3/10, 9/02*
U.S. Cl. 15—106 **14 Claims**

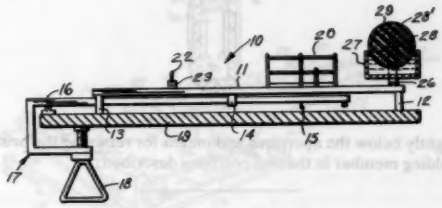


The cleaning brush has a holding means for simultaneously assembling, fastening and holding integrally a pair of back-to-back top and bottom mounted brush surfaces with short slanting bristles that are implanted therein. The bristles are 1 – 7 m/m in length and each of the inclined angles of the bristles to the respective brush surfaces is preferably 3° – 60° or at least 60° – 80°.

3,765,047
COMBINED SOLDERING GUN SUPPORT AND TIP CLEANER

Artin Tashjian, 43–05 44th Street, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 231,879
Int. Cl. B08b *1/04*; B23k *3/00*
U.S. Cl. 15—118 **4 Claims**



A soldering gun support for mounting on work benches which is adjustable to receive soldering guns of various sizes. Mounted on the soldering gun support are adjustable clamp members and a device for cleaning the tip of the soldering gun.

3,765,048
POLISH CAN

Lester Zakhi, 208 S. Hadley, Fort Wayne, Ind.

Filed Apr. 26, 1972, Ser. No. 247,710
Int. Cl. A47l *23/05, 23/28*
U.S. Cl. 15—258 **2 Claims**

A can for containing shoe polish, the can including a bottom member holding shoe polish, the bottom member having a rubber pad underneath for gripping a supporting surface so to prevent the can to slide while polish is being rubbed, and the can including a lid member which on its underside has a centrally placed polish applicator, the lid having concentric accordian pleats on top so that the applicator can be depressed downward against the polish to pick up some of it and for being rubbed against a shoe being polished.

3,765,049
BRUSH WITH RETRACTABLE BRISTLES

Donald Green; Michael Kane, both of New York, N.Y., and James P. Sullivan, Tustin, Calif., assignors to Magnion Inc., c/o Michael Kane, New York, N.Y.

Filed Jan. 17, 1972, Ser. No. 218,127
Int. Cl. A46b *17/06*
U.S. Cl. 15—169 **13 Claims**

A brush with retractable bristles is constructed which comprises an enclosure which has apertures through the top surface, a member which holds the bristles and which is movable upward and downward within the enclosure, bristles one end of which are held in the bristle holding member and the other end of which are aligned with the apertures, means for moving the bristle holding member from a position whereby the bris-

tles extend out through the apertures to a position whereby the bristles are substantially flush with the apertures or just

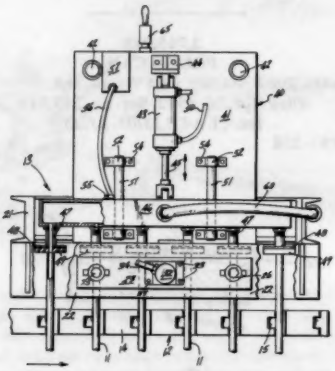
slightly below the apertures and means for retaining the bristle holding member in the two positions described.

3,765,050

APPARATUS FOR CLEANING TUBES

Don T. Van Allman, Alton, and Robert C. Voss, East Alton, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Filed July 30, 1971, Ser. No. 167,637
Int. Cl. A47l *5/38*
U.S. Cl. 15—304 **4 Claims**



An apparatus for cleaning the inside of tubes which achieves a high production level and avoids manual operation. The apparatus utilizes a conveyer for transporting a predetermined number of tubes in separate, spaced relationship, a means operatively connected to a source of fluid, preferably air pressure, and having a mouth portion for engagement with said tubes, and positioning means for placing said tubes from said conveyer into fixed, contacting relationship with said mouth portion.

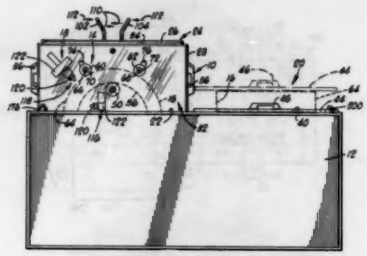
3,765,051

APPARATUS FOR CLEANING FILTER ELEMENTS OR THE LIKE

Charles T. Wanat, Oklahoma City, Okla., assignor to A-Nu, Inc., Oklahoma City, Okla.

Filed Nov. 12, 1971, Ser. No. 198,196
Int. Cl. A47l *5/38*
U.S. Cl. 15—302 **8 Claims**

An improved apparatus for cleaning filter elements or the like wherein an external spray assembly and an internal spray assembly are adjustably supported to direct cleaning fluid onto the external and the internal peripheral surfaces of the filter elements being cleaned, and wherein the filter elements are adjustably supported in a cleaning position by a drive roller assembly and a bias roller assembly, each cooperating to position the filter element in predetermined cleaning positions during a cleaning cycle. The apparatus includes a drying assembly supporting the filter element in a drying position wherein the cleaning fluid is removed from the filter element



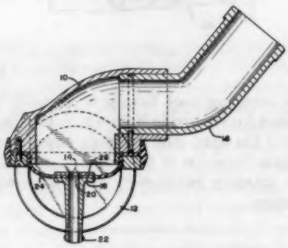
via a vacuum produced in a drying chamber, during a drying cycle. The drying cycle and the cleaning cycle are each automatically controlled.

3,765,052

VACUUM CLEANER SUCTION TOOL FOR CLEANING DEEP PILE SHAG RUGS

James Anderson, Baie D'Urfe; Denis Ducharme, Pierrefonds, and Raymond Descarries, Montreal, Quebec, all of Canada, assignors to Consolidated Foods Corporation, Old Greenwich, Conn.

Filed Feb. 29, 1972, Ser. No. 230,222
Int. Cl. A47l *9/06*
U.S. Cl. 15—369 **4 Claims**



In accordance with this invention there is provided a suction tool having a plurality of elongated tube-like nozzles rigidly connected together and pivotally mounted on a hollow body member having means such as a pair of wheels, movably supporting it on a surface to be cleaned. The tube-like nozzles are of a length such that they extend beyond the periphery of the supporting wheels and are of a relatively small diameter so as to be able to penetrate the deep pile of a shag rug. A flexible diaphragm seals the upper ends of the tube-like nozzles to the open lower face of the hollow body member while permitting the nozzles to pivot relatively thereto. Communicating with the interior of the hollow body member is an elbow or other suitable means to which may be connected a hollow wand constituting both a manipulating handle for the suction tool and a conduit for connecting to tool to a source of suction.

3,765,053

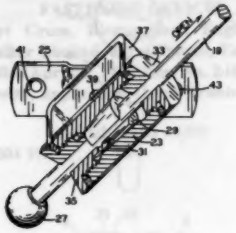
FRICTION SUPPORT FOR LIDS

Donald M. Anweiler, Fort Wayne, Ind., assignor to The Magnavox Company, Ft. Wayne, Ind.

Filed Aug. 28, 1972, Ser. No. 284,312
Int. Cl. E05f *3/00*
U.S. Cl. 16—49 **12 Claims**

A device for interconnecting a cabinet-like structure and a hingedly attached cover to frictionally support the cover in an open position is disclosed comprising a housing for attachment to the cabinet and an arm for attachment to the

cover, which arm passes at least part way through the housing and also through a deformable bushing which is confined within the housing for limited movement therein. Relative movement of the arm and housing in a preselected direction deforms the bushing thereby increasing the frictional force opposing that relative motion. Relative motion in the opposite



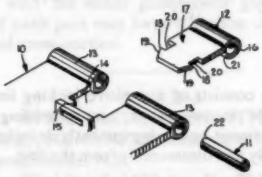
direction expands the bushing whereby it grips the arm less tightly so that during the limited movement of the bushing within the housing the frictional force drops to a second level, and when the bushing reaches one extreme of its permitted travel the arm and bushing execute a sliding motion causing the friction to increase somewhat to a third level which is less than its original level.

3,765,054

FRICTIONAL CONNECTING DEVICES

Maurice Vivian Johnson, Quinton, Birmingham, The County of Warwick, England, assignor to Wall & Leigh Thermoplastics Limited, Stafford, England

Filed June 2, 1971, Ser. No. 149,182
Int. Cl. E05d *11/08*
U.S. Cl. 16—140 **8 Claims**



A frictional connecting device in which a first member has a spigot movably mounted on it and is in snap fit engagement with a second member which frictionally engages the spigot to resist movement of the spigot relative to the second member and hence relative to the first member. In the described embodiment the first member forms part of a sun visor for a motor vehicle.

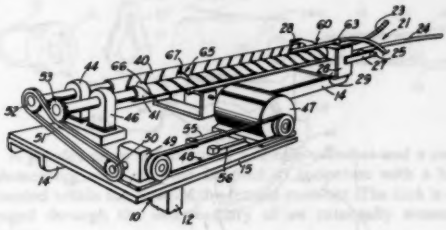
3,765,055

METHOD AND APPARATUS FOR KILLING POULTRY OR OTHER FOWL

Ernest E. Lewis, Flowery Branch, Ga., assignor to Gainesville Machine Company, Inc., Gainesville, Ga.

Filed Mar. 3, 1971, Ser. No. 120,639
Int. Cl. A22c *21/00*
U.S. Cl. 17—11 **8 Claims**

A method and apparatus for killing chicken or other fowl suspended in a head lowermost position by making a cut or similar opening through the neck of the bird adjacent the base of the skull to sever the jugular vein. The apparatus includes a pair of spaced guide means detailed for guiding and orienting the head of the fowl to be killed along a predetermined path and to a predetermined location. The spaced guide means include rotary guiding and orienting members which are provided for advancing the neck of the fowl along the predetermined path and for moving the head to the predetermined location. The rotary guide members are provided with fluid dispensing means for lubrication to permit the neck of the fowl to be moved easily through the guide means. Rotary cutting means is detailed in location relative to the predetermined path and predetermined location to make the cut



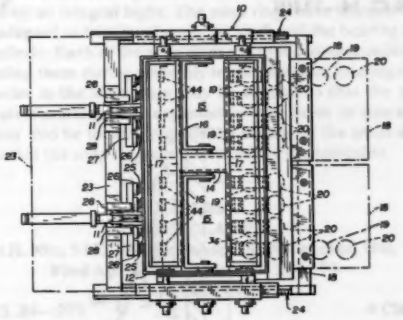
through the neck of the bird adjacent the base of the skull for severing the jugular vein leading from the brain as the bird is advanced along the predetermined path. The depth of the cut in the neck of the bird is detailed to sever the jugular vein without severing the spinal cord, gullet or windpipe and to allow the head to remain attached to the neck portion of the poultry.

3,765,056

MOLDING APPARATUS

James A. Holly, Park Forest, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed Oct. 20, 1971, Ser. No. 191,027
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **15 Claims**



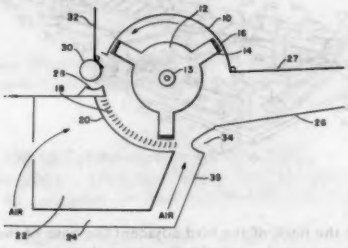
A molding apparatus for molding a round patty of plastic fool material such as ground raw meat, fish and the like that shrinks out of round during cooking including a pressurized supply means for providing a supply of the material into a round mold cavity closed on opposite ends by closure members and angled guide means in a closure member having a vertex at the opening through which the material is supplied under pressure and diverging sides extending therefrom, a preferred form of such guide means being concentric arcuate grooves in the closure member which may be circular grooves that are concentric with each other and with the center of the cavity.

3,765,057

APPARATUS FOR ALTERING WEIGHT PROFILE OF PICKER LAPS

George B. McLaughlin, Windham, and George A. Wilcox, Willimantic, both of Conn., assignors to The Kendall Company, Walpole, Mass.

Filed Apr. 14, 1972, Ser. No. 243,983
Int. Cl. D01g 9/04
U.S. Cl. 19—89 2 Claims



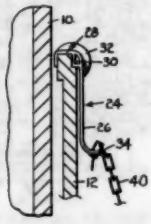
By adjusting the flow of air into the beater chamber of a picker lapper so that more air is delivered to the sidewall sections than to the center of the chamber, laps of textile fibers are produced which are heavier in the center sections than at their edge sections.

3,765,058

HOOK FOR OPENING BOXCAR DOORS

Perry W. Scdoris, 11115 S.E. Stark St., Portland, Oreg.

Filed Aug. 16, 1972, Ser. No. 280,970
Int. Cl. A44b 21/00
U.S. Cl. 24—73 HH 3 Claims



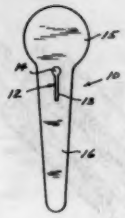
A hook designed for engagement with a side edge of a boxcar door to provide means establishing a pulling connection for the door. The hook includes a body member reversely turned at one end for engaging the edge of the door. The other end of the body member has an outturned tongue portion having a slot extending partially into the body member. The slot is arranged to receive a chain for connection to a pulling member such as a lift truck for opening and closing the boxcar door.

3,765,059

KNITTING AID

Mary Lou Ward, P.O. Box 962, North Attleboro, Mass.

Filed Apr. 4, 1972, Ser. No. 241,015
Int. Cl. F16g 11/00
U.S. Cl. 24—85 B 1 Claim



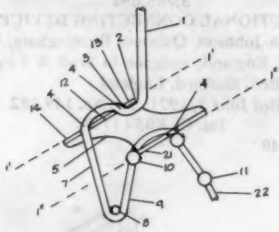
A device wedges the end of crochet yarn, string or the like; inserted into a ball of yarn or other cluster this device serves as an "end-finder."

3,765,060

LINE FASTENING DEVICE

Paul Robert Sharick, P.O. Box 16053, Sacramento, Calif.

Filed Aug. 4, 1972, Ser. No. 278,035
Int. Cl. F16g 11/00; A45f 1/18
U.S. Cl. 24—129 B 8 Claims



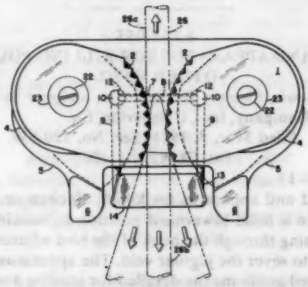
The invention consists of a positive locking line fastening device adjustable in two ways, one providing calibrated amounts of adjustment and being instantly detachable providing rapid assembly and disassembly from the line.

3,765,061

LEVER-RELEASE CAM CLEAT

Douglas B. Nash, 32906 Avenue Descanso, San Juan Capistrano, Calif.

Filed Mar. 27, 1972, Ser. No. 238,078
Int. Cl. F16g 11/10, 11/00
U.S. Cl. 24—134 CP 5 Claims



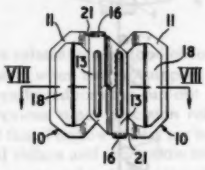
A rope holding and releasing device especially for use on sailing craft. Opposing serrated cam-type jaws grip taut rope.

Release components are operatively connected to the jaw surfaces whereby tension applied from various directions on the otherwise slack end of the rope will release the grip of the jaws, and allow the rope to be eased without removal from between the cams.

3,765,062
FASTENING DEVICES

Adrian Robert Cruse, Birmingham, England, assignor to Thomas Walker Limited, Birmingham, England

Filed Apr. 24, 1972, Ser. No. 246,746
Claims priority, application Great Britain, Apr. 28, 1971, 11,872/71
Int. Cl. A44b *13/00*
U.S. Cl. 24—201 HH 4 Claims



A two-part releasable fastening device for connecting strap or band portions of wearing apparel comprises two separate and identical component parts which slot and interlock together and which each consist of a plate member having a substantially planar body portion and an adjacent substantially planar offset coupling portion integrally interconnected by a transversely-extending cranked portion substantially in alignment with a re-entrant transversely-extending open-ended coupling slot. The coupling portion provides a relatively narrow transversely-extending tongue terminating in a latching projection or tab which establishes additional interlocking engagement with the other component part, and the plate member of each part may have a shallow curvilinear form in longitudinal cross-section.

3,765,063
STRAP FASTENER END FITTING

Holt A. Farley, Plainfield, N.J., assignor to Kinedyne Corporation, Mountainside, N.J.

Filed Oct. 2, 1972, Ser. No. 294,434
Int. Cl. A44b *19/00*
U.S. Cl. 24—201 D 4 Claims

A fastener has a head part connected to the end portion of a strap for separable coaction with a socket part, for example for use in cargo-hold down assemblies, and the head part has a locking member thereon which is releasably held in locking position to lock the head part in connected relation to the socket part, by the pressing of the strap end portion against the locking member when said fastener parts are assembled.

3,765,064
JEWELRY CLASP

Daniel Hoober, R.F.D. 1, Box 254, Sound Beach, N.Y., and Charles Frankel, 2702 Ford St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 875,861, Nov. 12, 1969, Pat. No. 3,611,513. This application Sept. 20, 1971, Ser. No. 181,976
Int. Cl. A44b *17/00*
U.S. Cl. 24—211 10 Claims

A jewelry clasp is formed of a female member and a complementary male member adapted to cooperate with a lock located within the body of the female member. The lock is engaged through the intermediary of an externally mounted spring.

3,765,065
BEARING LOCKING DEVICE

Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

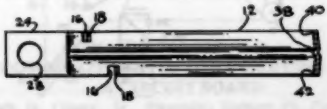
Filed May 4, 1972, Ser. No. 250,417
Int. Cl. A44b *21/00*
U.S. Cl. 24—256 7 Claims

A unitary sheet metal device for locking a loose fitting bearing ring to a shaft comprises first and second snap rings connected by an integral bight. The snap rings have internal surfaces adapted to frictionally grip the shaft and the bearing ring respectively. Each of the snap rings are split and have holes for expanding them during assembly to the shaft and bearing ring. The holes in the snap rings may be aligned so that the snap rings are simultaneously expandable. The holes in one snap ring may also be located outside the outline of the other snap ring so that the snap rings are independently expandable.

3,765,066
HOSE CLAMP

Albert H. Nitz, 9132 W. Bluemound Rd., Milwaukee, Wis.

Filed Apr. 14, 1972, Ser. No. 244,173
Int. Cl. B65d *63/02*
U.S. Cl. 24—279 4 Claims



The present invention is an improved clamping device for use in connecting generally flexible automobile radiator hoses and the like to pipes in water tight engagement therewith by use of improved tension exerting fastening means maintaining drop tight connections despite softening of the hose material during prolonged use and including a 360° continuous pressure transferring sealing ridge.

3,765,067

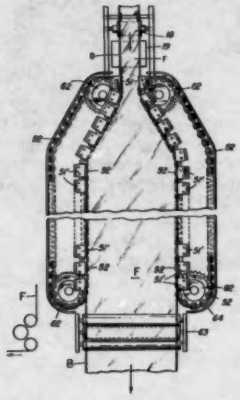
APPARATUS FOR BIAXIAL ORIENTATION OF THERMOPLASTIC FILM

Robert E. Fisher, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 854,471, Sept. 2, 1969, Pat. No. 3,676,539. This application Jan. 12, 1972, Ser. No. 217,276

Int. Cl. D06c 3/00

U.S. Cl. 26—54 2 Claims



An apparatus for biaxially orienting thermoplastic film, comprising two distinct stretching zones: the first zone imparting transverse stretch to the film, and the second zone imparting longitudinal stretch to the film. Continuous edge restraint of the web is maintained and the apparatus is so constructed that both transverse and longitudinal orientation occur within the confines of a single substantially uniformly heated chamber.

3,765,068

PROCESS AND APPARATUS FOR THE STUFFERBOX CRIMPING OF YARNS

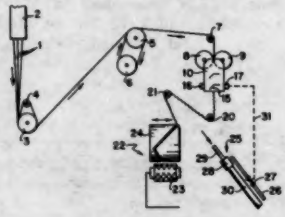
Pierre L. L. M. Rietjens, Arnhem, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed July 13, 1971, Ser. No. 162,066

Claims priority, application Netherlands, July 14, 1970, 7010429

Int. Cl. D02g 1/12

U.S. Cl. 28—1.7 6 Claims



Process and apparatus are disclosed for threading in a yarn crimping device such as a stuffer crimper wherby discharge of yarn from the device is detained during initial threadup an amount of yarn is present in the crimping chamber to effect sufficient crimp.

3,765,069

PROCESS FOR PRODUCING LOW CRIMP POLYETHYLENE OXYBENZOATE YARNS

Shiro Fujita, Tokyo-to; Hiroshiro Kimura, Koyoto-fu; Tadao Murakami, Osaka-fu, and Heiji Arimoto, Kyoto-fu, all of Japan, assignors to Unitika Kabushiki Kaisha, Hyogo-ken, Japan

Filed Sept. 16, 1971, Ser. No. 181,155

Claims priority, application Japan, Sept. 16, 1970, 45/81106

Int. Cl. D02j 1/22

U.S. Cl. 28—72.17 8 Claims

The present invention relates to a process for producing low crimp polyethylene oxybenzoate (hereinafter designated as PEOB) yarns, and more particularly, multifilament yarns having natural silk-like beautiful appearance and excellent feelings which is characterized by heat treating a PEOB drawn yarn having a β-value of from 20 to 80 and a shrinkage value in boiling water of from 20 to 35 percent under substantially no tension so as to decrease the β-value by more than 10.

3,765,070

READILY CLEANABLE ROLLER

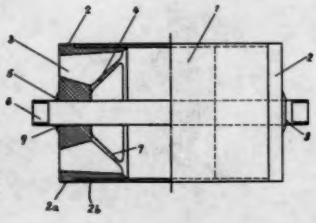
Karl Stumpf, Worringerstrasse 78, Dusseldorf, Germany

Filed Apr. 10, 1972, Ser. No. 242,568

Claims priority, application Germany, Sept. 30, 1971, P 21 48 753.6

Int. Cl. B21b 13/02

U.S. Cl. 29—116 R 3 Claims

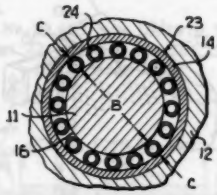


A roller for a runway can be dissembled and cleaned thoroughly. The roller includes a cylindrical body having end members mounted in the ends thereof, with central bores through the end members for slidably receiving the roller supporting axle. Kidney-shaped openings are formed in each end member and such openings progressively increase in size from the outer surface thereof toward the inner surface thereof.

3,765,071
METHOD OF FORMING A ROLLER BEARING OF SUPERIOR RUNOUT CHARACTERISTICS

Willard L. Bowen, Village Ln., Harwinton, Conn.

Continuation-in-part of Ser. No. 39,767, May 22, 1970.
This application Sept. 7, 1972, Ser. No. 287,010
Int. Cl. B23p *11/00*; B21h *1/14*
U.S. Cl. 29—148.4 A 8 Claims

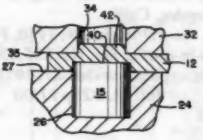


This disclosure relates to a method of forming a roller bearing assembly which, when used to support a shaft for rotation, unexpectedly greatly reduces the run-out of the shaft even as compared to previous super precision roller bearings. It has been discovered that if hollow rollers are substituted in a roller bearing for solid rollers and the hollow rollers are positioned between an outer race and a shaft or inner race in a preloaded condition with the allowable flexure of the rollers being at least slightly greater than the variations in radial spacing between the races, the run-out of a shaft axis so supported is greatly reduced. Further, the life of such a bearing is greatly extended. In addition, less precision rollers may be utilized.

3,765,072
METHOD FOR MAKING TUNING FORK RESONATOR

George L. Vollet, Massapequa, N.Y., assignor to Philamon Laboratories, Inc., Westbury, N.Y.

Division of Ser. No. 766,278, Oct. 9, 1968, abandoned. This application Mar. 18, 1971, Ser. No. 125,624
Int. Cl. B29d *17/00*
U.S. Cl. 29—169.5 7 Claims



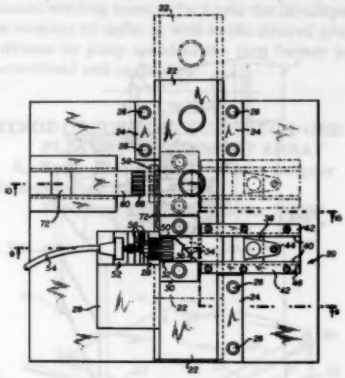
There is disclosed a tuning fork resonator with materials of high relative magnetic permeability joined by forcibly causing one of the materials to penetrate the other without the use of heat or filler material. The joined materials form part of a magnetic flux path therebetween. Penetration of a first of the materials into the second results in a displacing of material, the flow of which is restricted to form a projection of predetermined size and shape.

3,765,073
APPARATUS FOR ASSEMBLING A COMPONENT OF PARTS COMPRISING TERMINATIONS, CONDUCTOR LEADS AND ENCLOSURES

Robert W. Burns, West Orange, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,006
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 10 Claims

This apparatus has means for connecting elements of an electric circuit component by securing terminations to an enclosure, crimping the terminations to conductors, and bending the terminations downward, inward and upward around the end of the enclosure so that the crimped ends and the conductors are within the enclosure. The enclosure is held in a nest

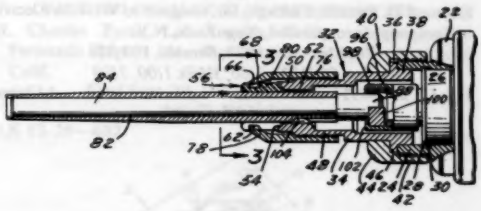


which shifts between crimping, forming and discharge stations; and there are tools that are guided into positions to operate on the terminations at the crimping and forming stations.

3,765,074
SLEEVE HOLDER FOR TOOLS

Leroy C. Payne, La Habra, Calif., assignor to Standard Pneumatic Motor Company, Whittier, Calif.

Filed Oct. 26, 1971, Ser. No. 192,472
U.S. Cl. 29—203 H 5 Claims



Apparatus for securing indexing sleeves for the bits of wire-wrapping tools wherein there is a sleeve holder having a bore that flares at its forward end. A resilient split-plastic insert has its inner end tapered, the tapered end being received in the flared part of the sleeve holder. The insert is removably held at the outer end of the sleeve nut which, when rotated in one direction, exerts longitudinal pressure against the end of the insert opposite the tapered end to effect traction of the insert so as to hold the sleeve in position. Rotation of the sleeve nut in the opposite direction allows the insert to expand and release the sleeve. The sleeve has a longitudinally-extending slot in the inner end into which a key of the sleeve holder is slidably received to prevent rotation of the sleeve.

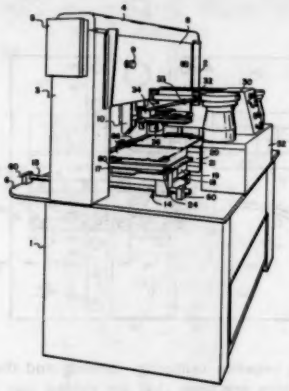
3,765,075
METHOD AND APPARATUS FOR INSERTING PINS INTO A CIRCUIT BOARD

Frederick D. Olney, Jr., Phoenix; Robert O. Crump, Scottsdale, and John L. Kowalski, Phoenix, all of Ariz., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 3, 1972, Ser. No. 215,970
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 22 Claims

A cluster pin insertion machine positions a predrilled circuit board beneath a pin insertion head having a plurality of pins

positioned therein. The machine cycles to insert the pins into the circuit board and then returns the head to a preload position where pin feeding apparatus, continuously loaded by a hopper, inserts pins into the head. The pneumatically



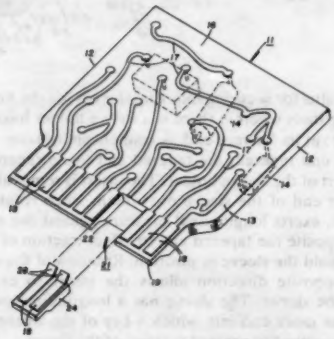
operated head inserts the preloaded pins into the predrilled holes after which the circuit board is incrementally repositioned by an X-Y positioning table controlled by a photosensor system.

3,765,076

PRINTED CIRCUIT BOARD AND A METHOD OF REPAIRING CONTACTS ON A PRINTED CIRCUIT BOARD

Edmund D. Brandt, Chicago, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 16, 1971, Ser. No. 199,255
Int. Cl. B23p 7/00; H05k 1/00, 3/00
U.S. Cl. 29—401 **4 Claims**



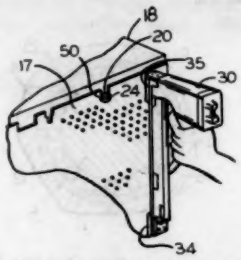
A printed circuit board having at least one defective contact along an edge thereof is repaired by first cutting away the defective contact and a portion of the underlying board to form a slot therein, the removed contact being severed from an associated conductor and the portion of the board not removed forming a shelf at the bottom of the slot. Next, a contact assembly comprised of a replacement terminal carried on a section of insulating material and fabricated substantially similar in configuration to the terminal and board cut away, is secured on the shelf within the slot. The replacement terminal is then electrically connected with the associated conductor.

3,765,077

METHOD AND APPARATUS FOR ATTACHING CABINET BACKS

Richard W. Pabich, 604 Edgewood Dr., La Grange Park, Ill.

Filed Jan. 29, 1971, Ser. No. 110,829
Int. Cl. B23p 11/00
U.S. Cl. 29—432 **9 Claims**



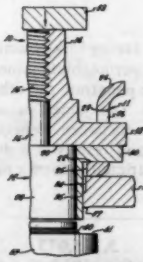
Two types of fasteners are used to provide a method of quickly and easily removing a cabinet back. One is a wing headed fastener with a generally "T" shaped cross section. The other fastener is a slip device, preferably having a somewhat "top-hat" configuration. A number of the slip device fasteners are attached, with the "top-hat" crown down, so that notches along one side of the back may be slipped under the hat brims of the fasteners. The wing headed "T" fasteners are attached to the back along the other three edges of the cabinet back. Thus, to replace the back, on the cabinet, it is only necessary to slip one edge under the brims of the slip fasteners. This brings the back into its properly aligned position; then, the back is pushed down over the wing headed "T" fasteners, which slip through keyhold slots in the back. The "T" fasteners are rotated, and the back is locked in its captured position.

3,765,078

METHOD OF ATTACHING A FLOATING NUT TO A WORKPIECE

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Division of Ser. No. 1,706, Jan. 9, 1970, Pat. No. 3,695,324, Continuation-in-part of Ser. No. 855,834, Sept. 8, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 193,101
Int. Cl. B23p 11/00
U.S. Cl. 29—432 **10 Claims**



An arrangement for attaching a nut to a workpiece in which an element is provided with opposed sidewalls and a bottom wall, with a tubular part extending from the bottom wall, a nut is attached to the element by extending tabs on the nut into apertures in the sidewalls, with the nut being made smaller laterally than the spacing between the sidewalls so that it can float, a knurl is provided on the tubular part which is extended through an opening in a workpiece, and a flange is bent outwardly at the end of the tubular part compressing the material

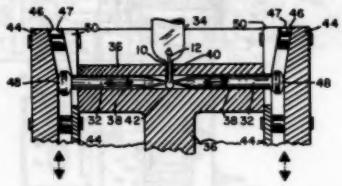
of the workpiece inwardly around the knurl to hold the assembly to the workpiece and prevent its rotation.

3,765,079

PERCUSSIVE PHOTOFLASH LAMP AND METHOD OF SECURING ANVIL THEREOF

Donald H. Pfefferle, and William C. Fink, both of Montoursville, Pa., assignors to Sylvania Electric Products, Inc., Danvers, Mass.

Division of Ser. No. 89,653, Nov. 16, 1970. This application Nov. 22, 1971, Ser. No. 201,230
Int. Cl. B21d *39/04*
U.S. Cl. 29—517 4 Claims



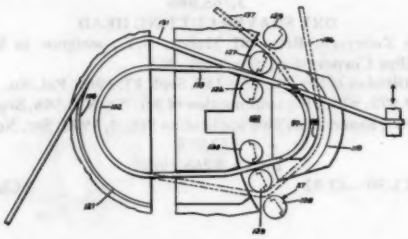
A percussive-type photoflash lamp in which the primer anvil wire is secured coaxially within the primer tube by means of a plurality of conical indentations in the tube. The method of securing the anvil wire in this manner comprises: supporting the wire within the tube, simultaneously and uniformly pressing a plurality of radially disposed pins against the tube by means of one direction of motion of a cylinder having cam surfaces bearing against the pins, and then withdrawing the pins by reversing the direction of motion of the cylinder.

3,765,080

APPARATUS AND METHOD FOR DEVELOPING WINDING COILS

Richard E. Lauer, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed July 6, 1971, Ser. No. 159,609
Int. Cl. H02k *15/00, 15/14, 15/16*
U.S. Cl. 29—596 19 Claims



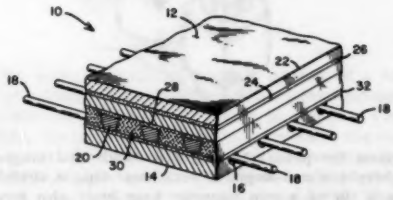
Apparatus comprises winding assembly that includes a wire disposing or placing means (e.g., a flyer) that generates turns of wire about a forming means that preferably comprises two or more sections. The forming means or former assists in determining the configuration (e.g., size and shape) of a winding turn as it is being generated. Coil former is longitudinally shifted relative to the flyer after a predetermined number of turns of wire are generated about a first former stage and an intercoil winding segment is generated in a desired manner During the shift, a predetermined number of winding turns are disposed upon a second stage of the former. In a preferred method, the coil former advances at a preselected speed greater than the winding turn feed rate while the intercoil winding segment is being generated. The former advances relatively slowly in order to secure the advantages associated with reduced machine part accelerations, velocities, and decelerations. The former includes a transition region that advances through a wire disposing plane associated with the flyer. This region includes a wire accommodating ledge or step. During development of the coils and generation of the intercoil segments, a lead is established between the segments and adjacent winding turns to facilitate the development of an accurate number of turns as well as the desired placement of wire. Advance or jump speed of the turn former is preselectively determined and controlled.

3,765,081

METHOD OF FORMING KEEPERED WORD LINE PLATED WIRE MEMORY ARRAY

Ronald A. Beck, Bloomington, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,389
Int. Cl. H01f *7/66*
U.S. Cl. 29—604 1 Claim



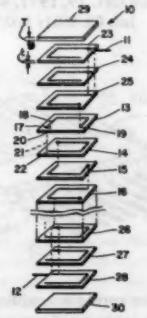
A method of forming a plated wire memory array comprising fabricating a laminate including adhesively bonded sheets of keeper and copper, forming word lines in the copper sheet, filling the interstitial areas between adjacent word lines with a particulate keeper material, bonding the word lines to a tunnel structure and then inserting plated wire bit lines in the tunnels.

3,765,082

METHOD OF MAKING AN INDUCTOR CHIP

M. Charles Zyetz, Los Angeles, Calif., assignor to San Fernando Electric Manufacturing Co., Inc., San Fernando, Calif.

Filed Sept. 20, 1972, Ser. No. 290,729
Int. Cl. H01f *7/06*
U.S. Cl. 29—602 5 Claims



A monolithic inductor chip for use in electronic circuits, especially integrated and/or hybrid micro-electronic circuits, is formed by providing a plurality of ferrite wafers each having a conductive element of generally U shape silk screened on its top surface. An end portion of each element passes through a hole in the wafer to a point on the bottom of the wafer. The various wafers are stacked in such a manner that the end portion on the bottom of one wafer electrically connects to the initial point of the U shape element on the top of the next successive wafer so that the stacked wafers define an inductive coil. The resulting stack is sintered to provide the monolithic chip.

3,765,083

METHOD OF MAKING A HEAD USING A TAPE GAP

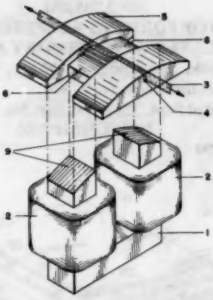
Eberhard M. Seehawer, Berlin, Germany, assignor to Firma Wolfgang Bogen GmbH, Berlin, Germany

Filed Feb. 22, 1971, Ser. No. 117,639

Claims priority, application Germany, Feb. 27, 1970, P 20 09 376.9

Int. Cl. G11b 5/22, 5/42

U.S. Cl. 29—603 3 Claims



A method for producing magnetic heads and magnetic heads whereby a non-magnetic rectilinear tape is stretched tautly in a slit of a non-magnetic base body also having recessed portions on both sides of the tape and channels for receiving the ends of a U-shaped magnetic core. The ends are placed in the channels and the recessed portions filled with soft magnetic material which thus magnetically connects the tape, which forms the gap, to the core ends. To form a multitrack head a base body having a plurality of successive pairs of channels and recessed portions adjacent the tape can be employed. If desired a shearing gap can also be provided in another location in the core.

3,765,084

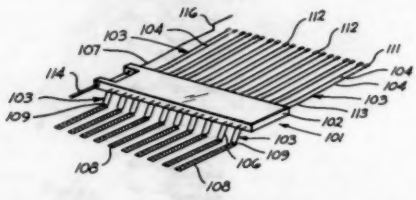
METHODS OF FORMING WIRE SPRINGS AND WELDING CONTACTS TO THE SPRINGS

William C. Kent, Franklin, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 7,029, Jan. 30, 1970, Pat. No. 3,703,029. This application Oct. 29, 1971, Ser. No. 193,833

Int. Cl. H01r 9/00

U.S. Cl. 29—630 R 10 Claims



Certain types of wire spring assemblies include a plurality of parallel, spaced wires extending from opposite sides of a block formed of an insulating material. A plurality of the wire spring assemblies are loaded into a rack and the rack is attached to a dispensing mechanism for feeding serially successive wire block assemblies from the rack. Adjacent pairs of the wire springs extending from one side of the block are twisted together and coined. The opposite ends of the wire springs are coined and have contacts welded thereto. Portions of the wire springs extending from both sides of the wire block are formed at offset angles and are thereafter loaded into another rack which is attached to an unloading mechanism so that the completed wire spring assemblies may be transferred to a subsequent assembly station and used in the formation of a switching assembly.

3,765,085

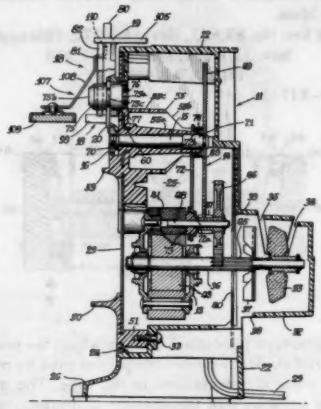
CAN OPENER

George M. Ponczek, Chicago; Otto J. Cousins, Oak Lawn, both of Ill., and William M. Copeland, Danville, Va., assignors to Sunbeam Corporation, Chicago, Ill.

Filed July 9, 1971, Ser. No. 161,002

Int. Cl. B67b 7/38

U.S. Cl. 30—4 R 15 Claims



A can opener having a readily detachable cutting mechanism which includes a lever supporting a cutter which cutter serves as a latching means to retain the cutting mechanism assembled to the can opener. The lever and cutter are both supported for rotational movement on a stub shaft detachably supporting the cutting mechanism with respect to the can opener. A simplified drive mechanism between the motor and can rotating wheel is provided. The motor and the shaft for supporting the can rotating wheel are supported on a flexible plate which deforms to compensate for variations in can dimensions.

3,765,086

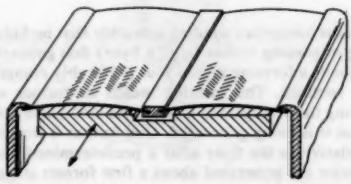
DRY SHAVER CUTTING HEAD

Frans Zuurveen, Briarcliff Manor, N.Y., assignor to U. S. Philips Corporation, New York, N.Y.

Division of Ser. No. 859,247, Sept. 17, 1969, Pat. No. 3,639,979, which is a continuation of Ser. No. 670,506, Sept. 6, 1967, abandoned. This application Feb. 4, 1971, Ser. No. 112,798

Int. Cl. B26b 19/06

U.S. Cl. 30—43.92 3 Claims



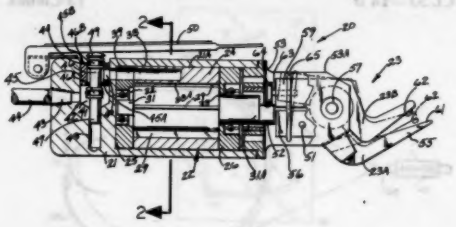
A dry shaver having a pair of reciprocating cutters, with a flexible arcuate shear plate formed as a partial cylinder for each cutter, the plates having two adjacent, parallel edges, and two outer, parallel edges, the latter engaging and being restrained by the corresponding edges of a shaving head housing.

3,765,087

POWERED CUTTING TOOL AND CUTTING HEAD THEREFOR

James A. Pawloski, P.O. Box 158, East Woodstock, Conn.

Division of Ser. No. 847,570, Aug. 5, 1969, Pat. No. 3,654,700.
This application Sept. 10, 1971, Ser. No. 179,551
Int. Cl. B26b *15/00*
U.S. Cl. 30—228 6 Claims



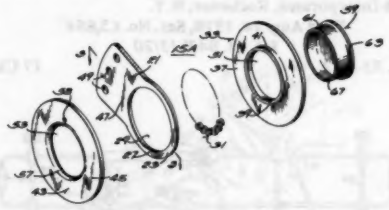
This disclosure is directed to a powered cutting tool and a cutting head adapted for use therewith comprising a housing for containing a motor means and an actuator for controlling the operation of the motor means. A cutting head is connected in driving relationship with the motor means. The cutting head includes a pair of relatively movable jaws having a by-pass disposed in substantial alignment with the shear line of the jaws so as to prohibit curling of the material or binding of the tool during a cutting operation.

3,765,088

NOSE ROLLER

Uwe F. Arff, Peterborough, Ontario, Canada, assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 24, 1971, Ser. No. 156,364
Int. Cl. B27b *17/04*
U.S. Cl. 30—384 9 Claims



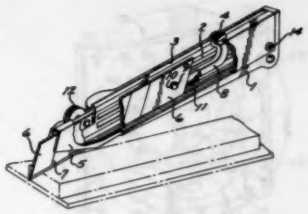
Disclosed herein is a cutter bar nose roller comprising a tongue adapted to be connected to one end of the cutter bar and including a circular wall defining an aperture, bearing means received in the aperture and engaging the tongue wall, a first side plate including an apertured side portion extending in parallel relation to and on one side of the tongue and a circular flange extending from the side portion into the tongue aperture in radially inwardly spaced relation from the tongue wall and in engagement with the bearing means, and a second side plate including a side portion extending in parallel relation to and on the other side of the tongue, and a circular flange portion extending from said second plate member side portion and into the aperture in the first place member side portion and joined to said first plate member for common rotary movement relative to the tongue.

3,765,089

KNIFE WITH ADJUSTABLE BLADE

Yozo Ibata, Osaka, Japan, assignor to Nippon Tenshashi Kabushiki Kaisha, Osaka, Japan

Filed June 16, 1971, Ser. No. 153,760
Int. Cl. B26b *1/08, 5/00*
U.S. Cl. 30—320 3 Claims



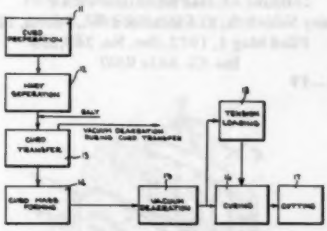
This knife with adjustable blade consists of a handle in which an elongated strip blade is slidably mounted and can be ejected from one end of the handle by means of a manually slidable ejector which is releasably attached to one end of the blade strip. The blade strip is scored at an angle at spaced intervals so that the used or dull end of the blade strip can be broken off and discarded when no longer useful. The blade is also held in extended position by means of a set screw.

3,765,090

METHOD AND APPARATUS FOR MAKING CHEESE

Miron J. Roberts, Glenview, and Heinz F. Runge, Niles, both of Ill., assignors to Kraftco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 768,391, Oct. 17, 1968, Pat. No. 3,562,910. This application Feb. 11, 1971, Ser. No. 114,647
Int. Cl. A01j *25/15*
U.S. Cl. 426—38 7 Claims



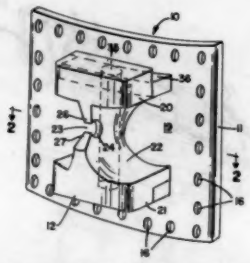
A method and apparatus for the manufacture of close-knit natural ripened cheese from curd which is in particulate form. A cheese-producing medium is made into curd in accordance with conventional procedures for the particular type of cheese to be produced. Since later treatment steps do not permit or result in moisture separation, the curd preparation procedure is adjusted to provide curd at a desired and legal moisture level for the cheese which is to be produced. The particulate curd is then transferred to apparatus wherein the curd is transferred and formed into a curd mass without damage to the curd particles. The curd is subjected to vacuum deaeration during the transfer. Thereafter, the curd mass is subjected to a second vacuum deaeration step. The curd mass is then cured to provide natural ripened cheese and the cheese is cut into suitable sized pieces and wrapped or otherwise packaged. As an optional feature, the curd may be subjected to tension loading during the curing step to provide a more closely knit texture.

3,765,091

ORTHODONTIC ONLAY FOR LIGHT-WIRE TECHNIQUE

Michael E. Northcutt, 12720 Dianna Dr., Los Altos Hills, Calif.

Continuation-in-part of Ser. No. 193,400, Oct. 28, 1971. This application July 31, 1972, Ser. No. 276,715
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 18 Claims



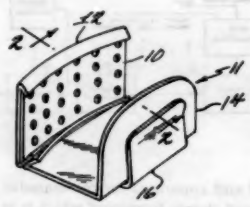
An orthodontic onlay for use with a single arch wire in a light-wire technique. The onlay is an integral plastic member for direct cementing to a tooth. It has a curved base portion whose rear surface conforms to the cheek surface of a tooth and has a series of cement-holding openings leading therefrom. The front surface of this base portion provides a bracket portion having a snap-in notch with a narrow, generally circular seat for an arch wire. An entrance portion of the notch is formed by a pair of facing walls resilient enough so that while the entrance opening is normally substantially smaller in diameter than the arch wire, its walls spread apart when the arch wire is pressed against them, to admit the arch wire to the seat, and the walls then spring back to lock the arch wire in the seat. The onlay also has one or more vertical openings for anchoring control auxiliaries. In one form, notches adjacent the top and bottom of each opening enables tying ligature wires for additional control.

3,765,092

DENTAL IMPRESSION TRAY

Peyton Sidney Neuwirth, 114 Stratford Dr., Peoria, Ill.

Filed May 1, 1972, Ser. No. 249,269
Int. Cl. A61c 9/00
U.S. Cl. 32—17 5 Claims



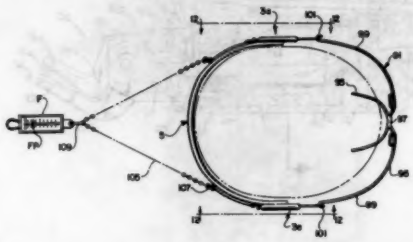
A pair of tray-forming members attached by a hinge along longitudinally adjacent edge portions and having inner adjacent edge portions which extend inwardly and upwardly so as to be mutually engaging when the tray-forming members are moved towards each other by action of the hinge. One of the tray-forming members has relatively perpendicular wall portions, one of which is positioned parallel to the other tray-forming member when attached by means of the hinge. A perforated plate is provided which is slidably removably disposed and retained by said other tray-forming member. A channel-shaped retainer is provided which is slidably removably engaged with the tray-forming members and which retains them in their U-shaped position while making an impression. When assembled, said impression tray has a generally U-shaped cross-section and said other tray forming member has a longitudinal radius of curvature which is generally the radius of curvature of adjacent series of teeth in a patient's mouth.

3,765,093

ORTHODONTIC TRACTION APPARATUS AND METHOD

Irvin S. DeWoskin, St. Louis, Mo., assignor to Orthoband Company, Inc., Barnhart, Mo.

Filed Mar. 22, 1972, Ser. No. 236,817
Int. Cl. A61c 7/00
U.S. Cl. 32—14 D 13 Claims



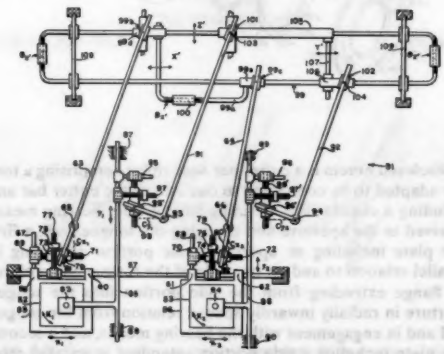
Orthodontic traction apparatus for applying traction to the teeth of a patient, including tensioning means for attachment to an orthodontic instrumentality on the teeth adapted to be stretched to apply traction, a neckband or headgear worn by the patient for anchoring the tensioning means after it has been stretched, and fabric fastening material for securing the tensioning means to the neckband or headgear while maintaining a desired traction force on the tensioning means, and the method of utilizing this comprising connecting the tensioning means to the orthodontic instrumentality, pulling on the tensioning means with a force-indicating gage until a desired traction force as measured by the gage is applied, and then securing the tensioning means to the neckband or headgear by means of the fabric fastening material while maintaining the pull on the tensioning means.

3,765,094

STEREO-PHOTOGRAMMETRIC SYSTEM

Henk Yzerman, Russikon, Switzerland, assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Aug. 14, 1970, Ser. No. 63,854
Int. Cl. B43l 13/20
U.S. Cl. 33—1 A 17 Claims

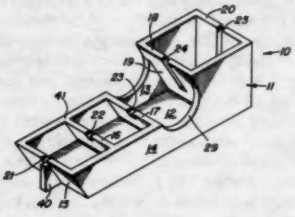


Stereo-photogrammetric method and apparatus for the metric evaluation and restitution of stereoscopic photographs of an object in numerical and graphical displays.

3,765,095
PATTERN PERFECTER
Janet R. Olive, 2520 E. Rose, Orange, Calif.
Division of Ser. No. 000,664, Jan. 5, 1970, Pat. No. 3,609,766.
This application June 18, 1971, Ser. No. 154,389
Int. Cl. A41h 3/02
U.S. Cl. 33—14 2 Claims

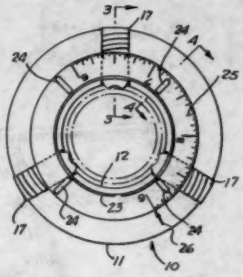
A method for perfecting a standard pattern to fit a non-standard figure is disclosed. A muslin test dress is made from a standard basic pattern and modified to fit an individual non-standard figure. Clear flexible plastic pattern elements are constructed showing the corrected seam, dart, and cut lines from the pieces of the test dress. The lines are formed on the clear pattern correction element by removable and replaceable pressure sensitive tape strips so as to permit adjustment of the pattern perfecter elements to compensate for changes in the non-standard figure.

3,765,096
MASON'S GUIDELINE HOLDERS
William G. Simmons, Walpole, and Lawrence A. Caprio, Whitman, both of Mass., assignors to Louis M. Gerson Co., Inc., Middleboro, Mass.
Filed Mar. 17, 1972, Ser. No. 235,642
Int. Cl. E04g 21/18
U.S. Cl. 33—86 7 Claims



A mason's guideline holder is formed of a generally L-shaped hollow plastic body which has first and second opposed side walls each having an axially extending portion and an upwardly extending portion to define first and second joining surfaces angularly arranged with respect to each other. A transverse front wall extends between the side walls and carries an interlocking means with a transverse wall at the second joining surface carrying a mating interlocking means so that the guideline holder can be interlocked with an identical guideline holder to form a convenient rectangular carrying unit. At least two of the transverse walls are parallel to each other so that the mason's guideline holder can be molded in a simple injection molding operation.

3,765,097
VARIABLE RING GAUGE
Marvin E. Woelich, 916 S. Taylor, Glendive, Mont.
Filed Oct. 1, 1971, Ser. No. 185,568
Int. Cl. G01b 3/34, 5/08
U.S. Cl. 33—178 R 2 Claims



A variable ring gauge having a base ring carrying a plurality of slots extending radially thereacross to a central bore. Engaging elements are slidably mounted in the slots for engaging a shaft to be measured extending through the bore. Each of the engaging elements have arcuate thread segments extending thereacross. An adjusting ring is secured to the base ring by means of a lock ring and the adjusting ring is provided with arcuate thread segments on its inner face which cooperate with thread segments on the engaging elements to move the engaging elements inwardly and outwardly in their respective slots equally. The adjusting ring is calibrated on its outer surface and the base ring has an indicator hand cooperating therewith so that as the adjusting ring is adjusted, the diameter of a shaft extending through the bore of the base ring can be read directly.

3,765,098
APPARATUS FOR MEASURING PISTON POSITION
Arthur W. Schafer, Sr., 215 Branch St., Almont, Mich.
Filed June 28, 1972, Ser. No. 267,042
Int. Cl. G01b 5/02, 5/14, 5/18
U.S. Cl. 33—181 AT 17 Claims

Apparatus for measuring the axial position of a piston within a cylinder bore of an internal combustion engine via a spark plug opening which intercepts the cylinder bore. A measuring gauge having a linearly movable spindle is mounted on the engine by an adjustable mounting arrangement which is compatible with a wide variety of engine models, including engines having either "90°" or "off-axis" spark plugs. The mounting arrangement may be mounted on the engine by fastening to an engine stud in the vicinity of the spark plug opening and adjusted so that the gauge spindle extends through the spark plug opening in a direction substantially parallel to the axis of the cylinder bore. The spindle is biased against the head of the piston to follow piston movement and develop gauge readings indicative of piston position.

3,765,099

METHOD AND APPARATUS FOR DRYING WET SURFACES

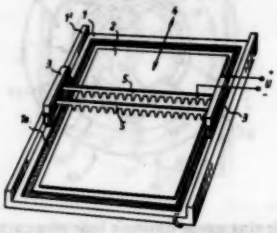
Josef Kohlmannsperger, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 6, 1973, Ser. No. 330,046

Claims priority, application Germany, Feb. 8, 1972, P 22 05 800.0

Int. Cl. F26b *3/34*

U.S. Cl. 34—1 **9 Claims**



Method and apparatus for drying wet surfaces, especially the wet surface of a photoelectric or electric copy carrier, in which elongated electrode means, having points directed toward, but out of contact with the wet surface of a carrier, and the carrier are moved relative to each other in a direction transverse to the elongation of the electrode means, while a potential difference of about 4–8 kv is applied to the carrier and the electrode means to thus produce gas ions emanating at high speed from the points of the electrode and a resulting gas-ion and air stream directed to the carrier surface which will push the liquid film off the surface during relative movement of the electrode means and the carrier.

3,765,100

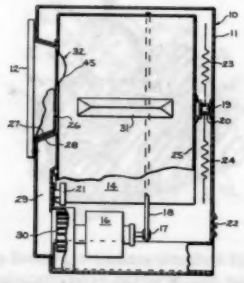
CAPACITIVE SENSING DRYER CONTROL

Donald S. Heidtmann, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 22, 1971, Ser. No. 182,580

Int. Cl. F26b *13/10*

U.S. Cl. 34—45 **6 Claims**



A dryer control including capacitive sensing means which makes contact with fabric within the dryer. The resistivity of the fabric is a function of the moisture retained therein and determines the level of alternating current which flows through the capacitive sensing means. Current is monitored by a control circuit including a multistate transistorized amplifier which serves to disable an SCR which is connected in series with a timing mechanism. As the fabrics dry and become less conductive, less alternating current is transmitted by the capacitive sensor, de-energizing the control circuit and enabling the SCR, which allows current to pass through the timing mechanism.

3,765,101

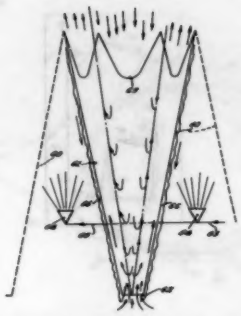
FRUSTO-CONICAL GRID

Hazelton H. Avery, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed Jan. 4, 1971, Ser. No. 103,481

Int. Cl. F26b *17/10*

U.S. Cl. 34—57 A **2 Claims**



A frusto-conical grid adapted for use between a high pressure chamber and a low pressure chamber for enabling fluid to flow from the high pressure chamber into a low pressure chamber to fluidize a bed of material contained therein adjacent the upper surface of the grid characterized by the grid being provided with a plurality of conically shaped passageway having the smaller opening disposed in the high pressure chamber with the enlarged opening disposed in the low pressure chamber. The passageways in one embodiment are formed by frusto-conical tubular members which have their walls joined to adjacent members by a welded intersecting line to minimize any flat surfaces on which the material of the fluidized bed can be built up or accumulated on. By controlling the angle of divergence of a conical tubular member the flow of the gaseous medium through the small end can be either along the inner surface or the center of the tubular member causing different types of mixing and interaction between the particles disposed in the tube and fluid medium passing therethrough. In one embodiment liquid such as water or other material can be mixed with the bed of fluidized materials by being applied to the grid adjacent the small opening and it is carried by the flow of the medium through the small openings of the passageways and is mixed with the materials of the fluidized bed. Such arrangement can be used for adding a fluid to a bed of material and can be used as a means of scrubbing a gaseous medium to remove solid particles therefrom. Another similar arrangement can be used to cause complete combustion of a vaporized fuel such as heavy oils added to the medium adjacent the area grid to produce, in effect, many "burners" by providing a large interface for combustion of fuel with air while passing through the grid.

3,765,102

ROTARY APPARATUS FOR TREATING PARTICULATE MATERIAL

John J. Fischer, East Stroudsburg, Pa., assignor to The Patterson-Kelley Co. Inc., East Stroudsburg, Pa.

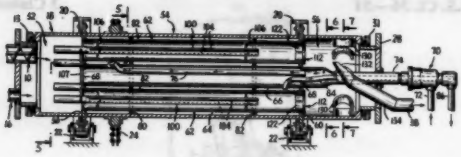
Filed Sept. 21, 1972, Ser. No. 291,077

Int. Cl. F26b *11/02*

U.S. Cl. 34—136 **23 Claims**

Apparatus for treating particulate material comprises a multiplicity of tubes mounted within a rotating shell. The material and a treating gas flow together through the tubes, while a heating or cooling fluid is conducted through a closed chamber surrounding the tubes for heat exchange with the tube walls, and thus with the material. The material is aerated

as it flows through the tubes by gentle mechanical tumbling agitation. A flow-control dam near the outlet end of each tube



provides a controlled fill of each tube and ensures a controlled retention time for the material.

3,765,103

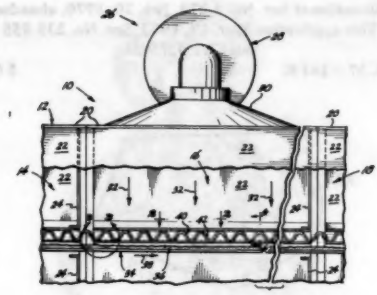
PLURAL GAS STREAM DRYER

Thomas R. Miles, Portland, Oreg., assignor to Foamat Foods, Corp., Corvallis, Oreg.

Filed Dec. 3, 1971, Ser. No. 204,555

Int. Cl. F26b *19/00*

U.S. Cl. 34—218 **4 Claims**



A dryer for drying a food-substance foam mat which is transported on a perforate conveyor belt, with the mat pierced at the locations of perforations in the belt. The dryer includes: a drying chamber through which the mat and belt travel; a gas heater-blower system for developing a unitary flow of heated gas in the chamber, which flow is in a direction generally toward one side of the travel path for the belt and mat; and a corrugated perforate web which completely spans the drying chamber, and which functions to form, from the unitary gas flow mentioned, plural spaced-apart streams of gas that are directed toward the travel path.

3,765,104

CAR BODY DRYING APPARATUS

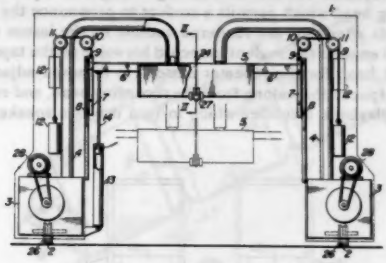
Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 25, 1972, Ser. No. 247,288

Int. Cl. F26b *19/00*

U.S. Cl. 34—229 **7 Claims**

A car body drying apparatus having a nozzle assembly suspended by at least one rope and constantly pulled upwardly through the rope under the influence of a weight, a fluid pressure operated piston-cylinder being provided for lowering the nozzle assembly against the influence of the weight.



3,765,105

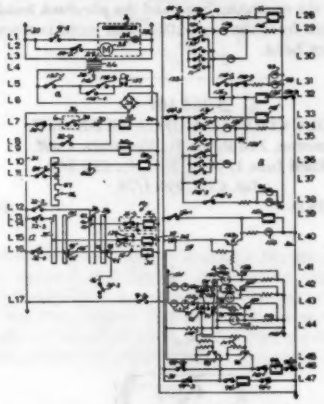
MULTIPLE PLAY OR INSTRUCTIONAL DEVICE

Harold S. Montgomery, Fox Point, and Roger J. Budnik, Milwaukee, both of Wis., assignors to David J. Nutting and Phyllis M. Nutting, both of Bayside, Wis.

Filed Nov. 19, 1970, Ser. No. 91,094

Int. Cl. G09b *7/08*

U.S. Cl. 35—9 A **32 Claims**



A dual play game has a separate input for each player. A film projector presents a question and answers and the players can select from a series of answers. A correct selection obtains a related score and actuates a drive relay to present the next question. An incorrect selection operates an indicator for that player. After a selected time, the projector presents a new question. A diode matrix board includes selectively interconnected lines connected to a double wafer stepping switch and to the game operating circuit to sequence each answer. One wafer controls the input matrix and the second wafer controls an output matrix. The stepping switch cycles through all positions for each question to provide the desired sequencing control.

3,765,106

TEACHING SYSTEM

Dudley E. Cornell, III, 221 San Pedro N. E., Albuquerque, N. Mex.

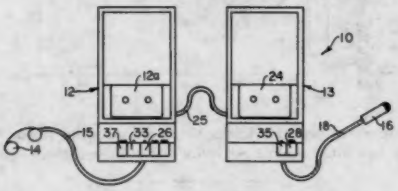
Filed July 29, 1971, Ser. No. 167,147

Int. Cl. G09b *5/04*; G11b *5/02*

U.S. Cl. 35—35 C **2 Claims**

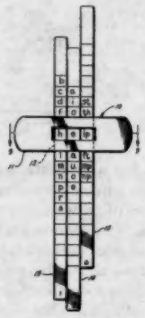
A foreign language teaching system includes a lesson cassette unit which audibly reproduces lesson information in the

form of correctly pronounced foreign language words to be learned at predetermined spaced-apart intervals of time, and a student repeater cassette unit having a magnetic tape and a recording head which permits a student to pronounce the lesson words after they are rendered audible by the lesson cassette and enables the student to record his voice on the tape. A playback head for the repeater cassette is disposed adjacent the tape spaced therealong from the recording head, and energizes a playback amplifier which in turn drives a speaker to



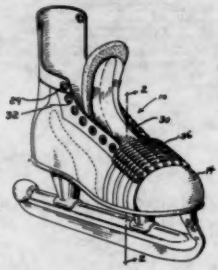
audibly reproduce the student's voice before the next lesson word is rendered audible by the lesson cassette so that the student can listen to his own pronunciation of the word to be learned. Prior to the reproduction of the next lesson word by the lesson cassette, the preceding lesson word is again reproduced audibly for comparison purposes. The tape is an endless tape, and a permanent magnet disposed adjacent the tape between the recording head and the playback head erases the information from the tape after each word is reproduced by the playback head.

3,765,107
EDUCATIONAL AND GAME DEVICE
Ronald E. Cameron, 210 Roma St., Redlands, Calif.
Filed June 1, 1972, Ser. No. 258,842
Int. Cl. G09b *1/28*
U.S. Cl. 35—35 H **4 Claims**



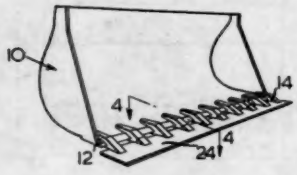
A word teaching device particularly useful in remedial reading programs for children is described. A plurality of elongated sticks are used, each having a column of numbers on one face and an associated column of word parts on the opposite face of each stick. The word parts may be letters, groups of letters or syllables. A few such sticks are arranged for longitudinal sliding motion in an up and down direction in a stick holder. Windows provided on opposite faces of the stick holder permit viewing of a row of numbers on one side and a row of word parts on the other side. The sticks are independently slid up and down by a child to a selected row of numbers. When the device is turned over the word formed of the row of word parts in the other window is read by the child.

3,765,108
SKATE
William H. Scott, 2663 Midland Ave., Agincourt, 740 Ontario, Canada
Filed July 27, 1972, Ser. No. 275,705
Int. Cl. A43b *11/00*
U.S. Cl. 36—51 **3 Claims**



The lower extent of skate boot lacing is replaced by elastic material.

3,765,109
SCRAPING BLADE FOR CONVERTING A CUTTING EDGE ON A LOADING BUCKET
Peter M. Daviduke, Saskatoon, Saskatchewan, Canada, assignor to Myers Excavating Ltd., Saskatoon, Saskatchewan, Canada
Continuation of Ser. No. 4,273, Jan. 20, 1970, abandoned.
This application Mar. 17, 1972, Ser. No. 235,855
Int. Cl. E02f *9/28*
U.S. Cl. 37—141 R **5 Claims**

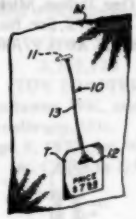


A loading bucket is described of the type which would be used on a tractor, front-end loader or other such vehicle, having a multiplicity of teeth on the bucket. At least two of the teeth are provided with a replaceable tip portion which houses a projecting member that is adapted to be received within a complementally formed housing secured to a scraping blade. By this arrangement, the scraping blade can be detachably secured to the loading bucket when desired, thereby readily converting the bucket's toothed edge to a straight edge, and vice versa.

3,765,110
SECURITY-TYPE FASTENER
Robert F. Olsen, West Redding, Conn., assignor to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Oct. 22, 1971, Ser. No. 191,688
Int. Cl. G09f *3/14*
U.S. Cl. 40—20 R **1 Claim**

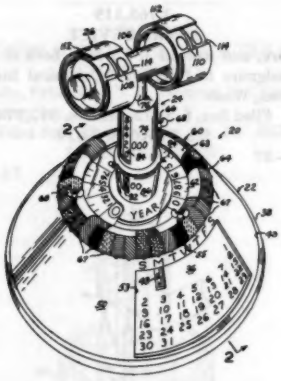
There is disclosed a one-piece molded flexible plastic security-type fastener for attaching a tag to merchandise. The fastener comprises a filament with an enlargement at one end,

and a bar or the like at its other end. In one embodiment, the filament is joined to the bar, and a pair of webs or gusset plates



join the bar and the filament. In another embodiment, a web or gusset plate joins the filament and the bar.

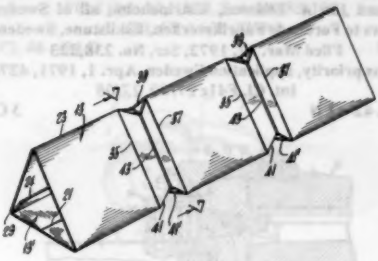
3,765,111
PERPETUAL CALENDAR
Lauren D. Spicer, P.O. Box 284, Grand Rapids, Ohio
Filed Sept. 28, 1972, Ser. No. 293,285
Int. Cl. G09d *3/06*
U.S. Cl. 40—111 **4 Claims**



A truncated-conical member, formed by a plurality of juxtaposed overlapping wall members, supports, at their upper limit, a color coded member and a plurality of cylinders and disks having calendar data thereon. An opening, provded in the outer frame wall, exposes calendar data of a particular month printed on inner walls of the frame when the walls are selectively positioned.

3,765,112
POINT-OF-PURCHASE DISPLAY
Milton Cooper, 215 East 68th Street, Apt. 32b, New York, N.Y.
Filed Aug. 28, 1972, Ser. No. 284,390
Int. Cl. G09f *19/00*
U.S. Cl. 40—126 A **6 Claims**

A vertical advertising display assembly formed from an initial flat folded condition, comprising vertically aligned tiers of interconnected display panels. In an upstanding assembled condition, each upper tier of the display nests in its lower adjacent tier. Display panels in each tier are adapted to receive

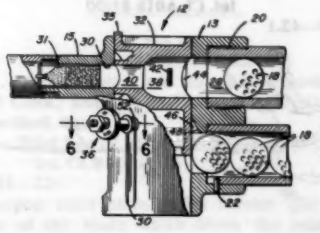


advertising indicia. The display is assembled from the flat folded condition by simple manipulation.

3,765,113
RESILIENT CATTLE INDENTIFICATION TAG
Harry H. Magee, 1025 Lagonda Way, Danville, Calif.
Filed Aug. 6, 1971, Ser. No. 169,714
Int. Cl. G09f *03/04*
U.S. Cl. 40—300 **8 Claims**

A unitary livestock tag having at least two plys of a rubbery, flexible material and having two flaps of relatively equal dimensions joined by a narrow neck. The sides of the flap adjoining the neck angling backwards away from the neck and are mildly curved at the juncture. The flaps are slotted to aid a flap being pulled through slits formed in the hide of an animal.

3,765,114
NON-LETHAL RIOT DETERRENT WEAPON
William R. Blake, P.O. Box 3702, Tulsa, Okla.
Continuation-in-part of Ser. No. 799,647, Feb. 17, 1969, abandoned. This application Aug. 2, 1971, Ser. No. 168,097
Int. Cl. F41c *7/00*
U.S. Cl. 42—1 F **2 Claims**



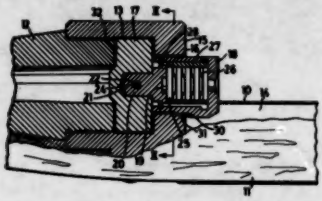
Golf ball type projectiles are discharged by a modified shotgun to be used as a non-lethal riot deterrent weapon.

3,765,115

SAFETY LOCK FOR BREECH OPENING FOR FIREARMS

Lennart J. I. Johansson; Sven E. Andersson, both of Eskilstuna, and Jan A. Eliasson, Katrineholm, all of Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Mar. 27, 1972, Ser. No. 238,223
Claims priority, application Sweden, Apr. 1, 1971, 4276/71
Int. Cl. F41c *27/00, 27/08*
U.S. Cl. 42—1 N 3 Claims



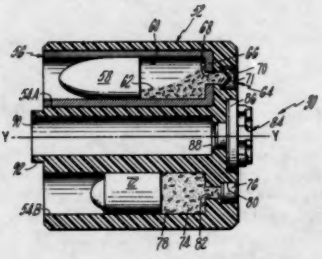
Safety lock for insertion into the breech opening of a firearm comprising a lock member rotatably connected to a cylinder member, the lock member being received in the chamber of the breech block and rotated therein to a locked position by a key inserted into the cylinder member.

3,765,116

CYLINDER FOR REVOLVERS

Melvin Zaid, Long Island, N.Y., assignor to Colt Industries Operating Corp., Hartford, Conn.

Filed Jan. 7, 1971, Ser. No. 104,603
Int. Cl. F42b *39/04;* F41c *1/00, 25/00*
U.S. Cl. 42—89 3 Claims



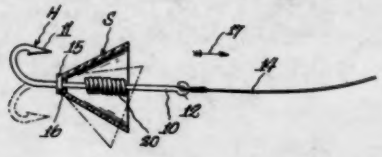
A preassembled revolver cylinder having preloaded projectile and propellant packages.

3,765,117

SNAG-PROOF PROTECTORS FOR FISHING HOOKS

Robert L. Gibson, Sr., Grove St., Brookfield, Ohio

Filed Aug. 9, 1972, Ser. No. 279,216
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.1 7 Claims



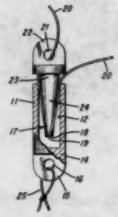
A snag-proof protector for a fishing hook formed of resilient plastic material and providing a conical skirt about the shank of the hook, with the small end of the cone facing the barb of the hook and the large open end of the conical skirt facing the line attaching means of the hook.

3,765,118

DOWNRIGGER RELEASE FOR DEEP WATER TROLLING

Richard C. Reitler, Rt. One, Delton, Mich.

Filed June 23, 1972, Ser. No. 265,730
Int. Cl. A01k *97/00*
U.S. Cl. 43—43.12 3 Claims



A downrigger release for deep water trolling which comprises a hollow, tubular member closed at one end and open at the other end. An elongated, tapered, frusto-conical member is received within said hollow,tubular member and retains a fishing line between the inner wall of the hollow, tubular member and the lateral surface of the frusto-conical member.

3,765,119

SNARE DEVICE

Alan W. Hare, and Ronald J. Carlson, both of Port Angeles, Wash., assignors to Northwest Technical Industries, Inc., Port Angeles, Wash.

Filed Dec. 6, 1972, Ser. No. 312,774
Int. Cl. A01m *23/24*
U.S. Cl. 43—87 6 Claims

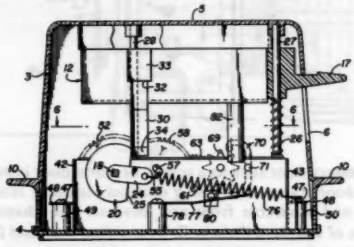
The snare comprises an elongated two-part stiff shank or stem member to be manually grasped single-handedly at the proximate end and having a flexible extension portion at the distal end. A traveller member carrying latch means slides along the stiff portion between the distal end and the handle portion. At the extreme or outer end of the flexible portion is a snaring strand having a ring-like member adapted to encircle and slidably move along both the flexible and rigid portions of the snare. The ring-like member may engage and be retained by the latch means on the traveller member.When the flexible

snaring strand is tensed as when the ring-like member is drawn toward the proximate end of the shank or stem portion, the flexible portion of the shank is bowed and energy is stored to be employed when a snaring operation is to be performed. When the ring like member is released a snaring loop is formed and cast outward and around an object such as a fish or snake or animal about which the snare is placed.

3,765,120
TOY TOASTER

Gerald A. Waak, Manitowoc, Wis., assignor to Aluminum Specialty Company, Manitowoc, Wis.

Filed Sept. 8, 1972, Ser. No. 287,280
Int. Cl. A63h 3/52
U.S. Cl. 46—14 **5 Claims**

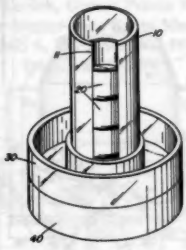


A toy pop-up toaster includes a presettable, spring actuated timing mechanism which is actuated when a lever is depressed to lower simulated bread slices into the toaster housing.

3,765,121
STACKING TOY WITH INNER AND OUTER STACKING COMPONENTS

Jorma Vennola, Princeton, N.J., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,802
Int. Cl. A63h 33/06
U.S. Cl. 46—17 **18 Claims**

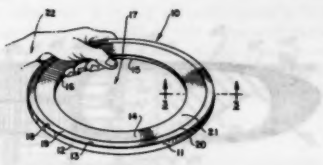


An amusement device that can be utilized as a stacking toy that teaches constructional principles, as a puzzle, or in other forms. In accordance with the invention, there is provided an elongated hollow cylinder having a longitudinal slot therein adapting it to be compressed circumferentially. A plurality of rings proportioned to be slidably fit over the cylinder in stacked arrangement are provided. Also provided are a plurality of cylindrical disks proportioned to be slidably fit within the cylinder in stacked arrangement. First and second end caps are proportioned to fit over and compress the end of the cylinder so as to be yieldingly held in frictional engagement therewith. In a preferred embodiment of the invention, each of the end caps forms the center of an end ring, the end rings having the same outer diameter as the plurality of rings. When the device is assembled in its most natural form, it gives the appearance of concentric cylinders.

3,765,122
FLYING TOY

Roy English, 2733 S.E. 31st St., Portland, Oreg.

Filed Oct. 29, 1970, Ser. No. 85,100
Int. Cl. A63h 27/00
U.S. Cl. 46—74 D **5 Claims**

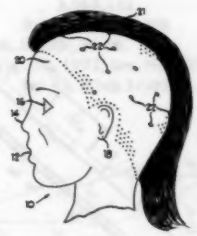


A flying toy has an annular skirt section and a ring section whose outer edge is coupled to the skirt section and whose inner edge defines a circular central opening. An inner segment of the ring constitutes a circular shaped deflector surface inclined downwardly and inwardly towards the central opening. While the toy travels with a spinning motion through the air a stream of air slips over the toy's leading edge and is guided downwardly by the deflector surface into the central opening and thereafter is directed rearwardly beneath the toy's trailing edge for cushioning or supporting the trailing edge.

3,765,123
DOLL WITH PERMANENTLY SECURED HAIR COMBINED WITH DETACHABLE HAIR INSERTS

Rouben Terzian, Chicago, Ill., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Dec. 29, 1971, Ser. No. 213,420
Int. Cl. A63h 3/44
U.S. Cl. 46—172 **2 Claims**



A doll head construction having strands of hair with a plurality of yieldable apertures in the top of the doll head and a plurality of different supplemental hair pieces for insertion in the head apertures for combining with the existing hair strands creating different hair arrangements for the doll.

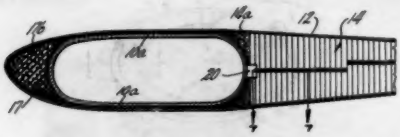
3,765,124
HELICOPTER ROTOR BLADE

Donald L. Ferris, Newton, and Robert J. Worrell, Ansonia, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 19, 1972, Ser. No. 273,230
Int. Cl. B64c 11/16, 27/00, 27/46
U.S. Cl. 416—226 **12 Claims**

A helicopter rotor blade has a tubular spar extending lengthwise of the blade which forms the main strength member of the blade. The spar is closed at both ends to contain a gaseous fluid under pressure and has pressure indicating means responsive to pressure loss due to a leak caused by a crack in the spar wall. A continuous skin of fluid impervious

material is wrapped chordwise about the spar and extends fore and aft of the spar to form the airfoil contour of the blade. A honeycomb filler is provided in the space aft of the spar. To collect leakage gases from a cracked spar, a series of ribbed blankets are wrapped about the spar along its length with their ribs contacting the spar to form longitudinal fluid passages between ribs. These are interconnected by transverse



generally chordwise passages between the ribs of adjacent blankets which lead to a fluid collecting port extending along the trailing edge of the spar. The honeycomb cells aft of the spar are interconnected by holes in the cell walls and some of these cells connect with the spanwise collecting port at the trailing edge of the spar and provide a sump for leakage fluid within the blade of sufficient volume to give the required pressure drop within the spar to indicate a crack in the spar.

3,765,125

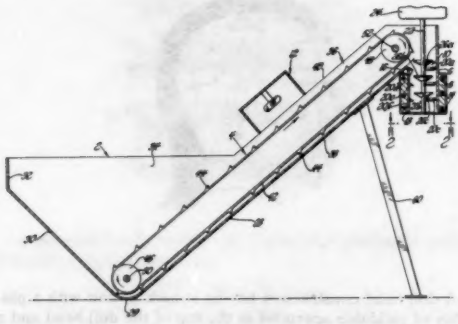
APPARATUS FOR TREATING SEEDS

Raymond D. Amburn, 8325 Riverland Dr. (6 No. 1), Sterling Heights, Mich.

Filed July 3, 1972, Ser. No. 268,285

Int. Cl. A01g 7/04

U.S. Cl. 47—1.3 **23 Claims**



Apparatus for treating seeds to induce magnetism in the seeds including a hopper for containing a quantity of seeds to be treated, a conveyor for conveying seeds from the hopper, a tubular conduit having its inlet end disposed to receive seeds from the discharge end of the conveyor and its outlet end diposed below the inlet end. Radiant energy means is supported above the conveyor for exposing seeds being conveyed by the conveyor to radiant energy prior to discharge of the seeds into the inlet of the tubular conduit, and a magnet is supported on the tubular conduit for producing a magnetic field within the conduit. Agitating means is provided in the conduit for varying the orientation of seeds passing through the conduit with respect to the magnetic field.

3,765,126

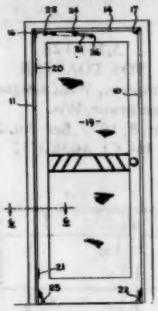
PORTABLE DOOR METHOD AND MEANS

Michael E. Pappas, 17210 Eastwood Ave., Torrance, Calif.

Filed Jan. 31, 1972, Ser. No. 222,121

Int. Cl. E06b 1/00

U.S. Cl. 49—380 **2 Claims**



A secondary door such as a screen or storm door is mounted within a door frame comprising channel elements readily attachable and separable from one another. The channel elements are of standard sizes to fit over either standard front or standard rear door stops of the jamb and lintel of a permanent door frame. The channel elements are not affixed or attached to the permanent door frame in any manner whatsoever, so that neither hardware such as screws or bolts, nor the use of any tools, is required to install or remove the secondary door.

3,765,127

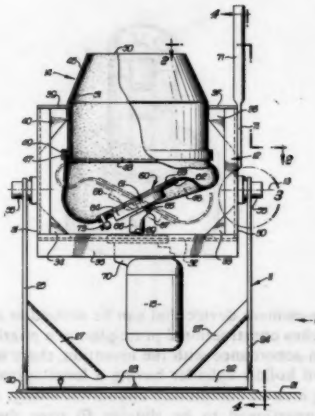
POLISHER AND BURNISHER

Leslie H. Garlinghouse, Pasadena, Calif., assignor to Garlinghouse Brothers, Los Angeles, Calif.

Filed Dec. 20, 1971, Ser. No. 209,707

Int. Cl. B24b 31/06

U.S. Cl. 51—163 **5 Claims**



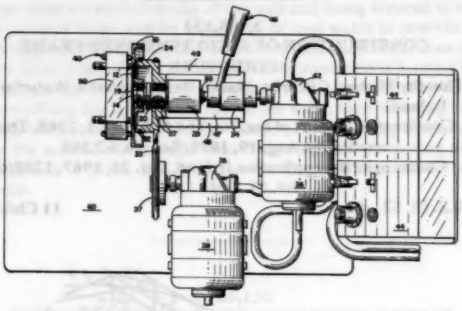
A unitary polishing and burnishing machine has a frame carrying a composite hopper tiltably mounted on a supporting stand with a flexible mixing section lying on the tilting axis and a stiff loading section lying above the mixing section. A motor is mounted on the frame at a location below the hopper and in general vertical alignment whereby operating masses hold the hopper upright during operation and facilitate tilting to an inverted position to discharge.

3,765,128

LAPPING MACHINE

Lee C. Burkey, Yorba Linda, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 20, 1972, Ser. No. 236,296
Int. Cl. B24b 5/18
U.S. Cl. 51—73 R 10 Claims



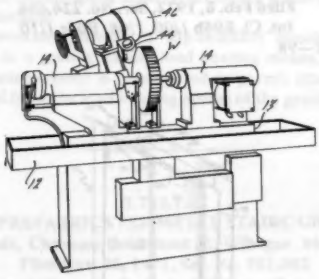
A spherical surface lapping machine wherein two counter-rotating surfaces defining a plane are also orbited in the plane around a shaft by a crankshaft offset to provide a complex movement to the surfaces. A pair of cup-shaped laps, for engaging a spherical surface, are supported for individual axial rotation with drive wheels connected to each of the laps being held in friction contact with the rotating surfaces so as to impart a rotation to the laps, which rotation is periodically reversed and varied in speed as the individual drive wheels are selectively forced into contact with orbiting counter rotating surfaces.

3,765,129

GEAR FINISHER WITH FORCE MEASUREMENT

Russell W. Anthony; Carl H. Motz, both of Harper Woods, and Richard W. Tersch, Grosse Pointe Woods, all of Mich., assignors to Lear Siegler Inc., Santa Monica, Calif.

Filed July 6, 1971, Ser. No. 159,734
Int. Cl. B24b 5/00
U.S. Cl. 51—52 R 27 Claims



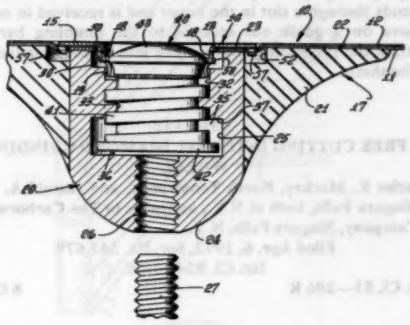
A gear finishing machine in which a work gear is rolled in tight mesh with a gear finishing tool, and in which means are provided for measuring the resultant force acting directly between the gear and tool. The force measurement means includes an indicator which is also capable of measuring wear on the gear finishing tool, associated with signal means warning when tool wear requires dressing of the tool.

3,765,130

MOUNTING FOR ABRASIVE DISC

Aleck Block, Los Angeles, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.

Filed Dec. 23, 1971, Ser. No. 211,396
Int. Cl. B24d 17/00, 13/14, 13/20
U.S. Cl. 51—378 22 Claims



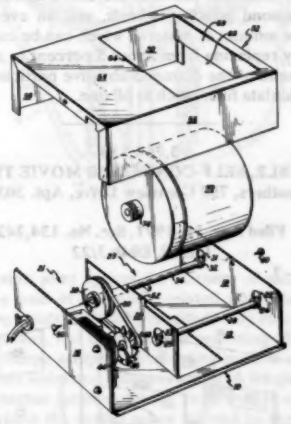
Mounting for an abrasive disc for quickly mounting the disc on a wheel adapted for attachment to a power operated spindle or arbor and without the use of tools, or removing the disc from the wheel by a reversal of the manipulation of attaching. The mounting includes a retainer to which the disc is secured and which embodies a clamping flange overlying the abrasive surface in the marginal region of a central aperture, and an extension disposed through the aperture and keyable to a stud threaded in the hub of the wheel. The stud can be drawn up within the hub by relative rotation of disc and hub to compress the disc between the flange and the hub.

3,765,131

ROCK TUMBLER

Gary T. Christensen, Seattle, Wash.

Filed Feb. 18, 1972, Ser. No. 227,412
Int. Cl. B24b 31/02
U.S. Cl. 51—164 9 Claims



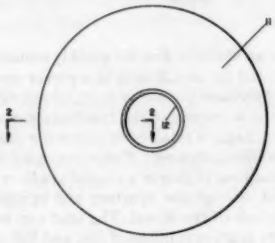
A rock tumbler for rotating a tumbling barrel containing rocks and a grinding and polishing medium. The rock tumbler includes a chassis having a pair of spaced walls that define a tumbling compartment and a pair of spaced shafts extending across the compartment that are rotatably mounted in bearings. The bearings are fitted in slots in the walls in such a

manner that the bearings may be removed from the walls by raising them in slots. A cover fitted on the chassis has an opening that receives a tumbling barrel when it is supported on the shafts and flanges bounding the opening that extend to locations above the bearings to restrain upward movement of the bearings. One of the shafts is drivingly connected to a motor that can rotate this shaft and thus rotate the tumbling barrel. A tab projecting upwardly of one of the walls between the shafts extends through a slot in the cover and is received in annular groove on a guide nut secured to the tumbling barrel to restrain the tumbling barrel against movement longitudinally of the shafts.

3,765,132
FREE CUTTING INTERNAL DIAMOND GRINDING WHEEL

Charles R. Mackey, North Tonawanda, and Harold A. Stein, Niagara Falls, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,679
Int. Cl. B24d *5/00*
U.S. Cl. 51—206 R **8 Claims**

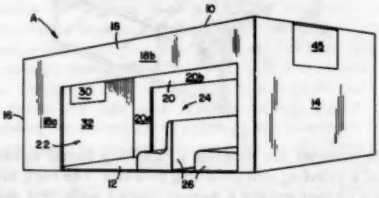


Internal diamond grinding wheels typically comprise in combination a nonabrasive metallic core which, in contrast to ordinary grinding wheels, has an outer portion which is adapted to be mounted for rotating and an inner circular perimeter which is the site of grinding. At the inner circular perimeter of the nonabrasive metallic core is an inner abrasive section of diamond abrasive particles which are bonded, typically by electroplating, onto the nonabrasive metallic core. The present invention provides increased useful life for such internal diamond grinding wheels, and an even greater increase in the amount of material which can be cut per carat of diamond, by replacing from about 5 percent to about 75 percent by volume of the diamond abrasive particles with a soft, friable particulate filler, such as olivine.

3,765,133
PORTABLE, SELF-CONTAINED MOVIE THEATRE

Gary G. Smothers, 750 Glenview Drive, Apt. 303, San Bruno, Calif.

Filed Apr. 15, 1971, Ser. No. 134,242
Int. Cl. E04b *3/22*
U.S. Cl. 52—7 **5 Claims**

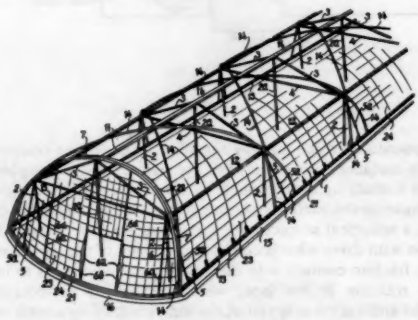


A portable, self-contained movie theatre having a movie screen, movie projector and seating therein. This theatre is dimensioned for ready installation into food, variety, department stores and the like and comprises a rectangular, box-shaped theatre housing having a ceiling and floor, a pair of oppositely opposed end walls, and a pair of oppositely opposed sidewalls. The movie screen is carried within the housing adjacent one of the end walls, and a rectangular opening in at least one of the sidewalls is provided to define a portal for easy access to seats secured interior of the theatre housing.

3,765,134
CONSTRUCTION OF RIGID TENSIONED FRAME STRUCTURE

Timothy Michael Gilchrist, Marvis Bank, Newrath, Waterford, Ireland

Continuation-in-part of Ser. No. 764,058, Oct. 1, 1968. This application Aug. 10, 1970, Ser. No. 62,265
Claims priority, application Ireland, Oct. 26, 1967, 1288/67
Int. Cl. E04b *1/347*
U.S. Cl. 52—63 **11 Claims**

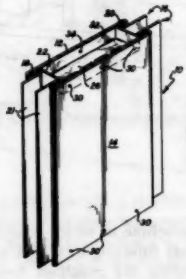


In a roof structure a flexible roofing membrane is supported and secured between at least two layers of tensioned flexible elements such as wires or cords. Each layer comprises a number of longitudinal tensioned wires and a number of transverse tensioned wires. The wires are attached to curved anchorage units, and the entire structure is supported on tensioned trellis trusses and purlins.

3,765,135
OVEN WALL AND PANEL THEREFOR

Jacob M. Gerhardt, 114 Ingleside Avenue, Marietta, Ohio

Filed Feb. 8, 1972, Ser. No. 224,496
Int. Cl. E04b *1/00, 1/68;* E04c *1/10*
U.S. Cl. 52—98 **10 Claims**



An oven or furnace assemoly formed of a plurality of contiguous panels assembled to each other. Each panel is formed

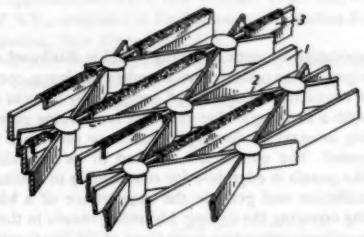
of spaced inner and outer walls having resilient tangs at the wall ends. The tangs of the contiguous panels overlap each other and apply resilient pressure against each other to retain the panels in assembled relation while allowing the walls to breathe. The tangs are formed at the ends of wall extensions of the inner and outer walls that have loops that receive legs of flanges that extend between the walls. Channels, extending between the walls, are secured to the walls by spot welds, each channel being secured to its associated inner wall by a single spot weld located centrally of the wall and being secured to its associated outer wall by a plurality of spot welds to provide a stronger securement of the channels to the outer walls than to the inner walls. A batt of compressible insulation is located in the interior of each panel. The panels are assembled by first assembling the flanges to a first of the walls, then inserting the batt of insulation between the flanges, then hooking the loops of the second of the walls onto flange legs, then inserting the channels in place, and then spot welding the channels to the walls.

3,765,136

GRIDS, GRATINGS OR LIKE OPEN WORK SUPPORT SURFACES OR FLOORS

Derek Percival Mudd, Middlesbrough, England, assignor to Lionweld Limited, Teeside, England

Filed Aug. 28, 1970, Ser. No. 67,743
Int. Cl. E04c 2/42
U.S. Cl. 52—180 **1 Claim**



The invention relates to improvements in or relating to grids, gratings or the like open work support surfaces or floors and has particular application to providing a non-slip or slip-resistant surface.

The invention provides a slip-resistant member for attachment to a grating having load bearing means, where the slip-resistant member is constructed to permit attachment to or removal from the load bearing means of the grating.

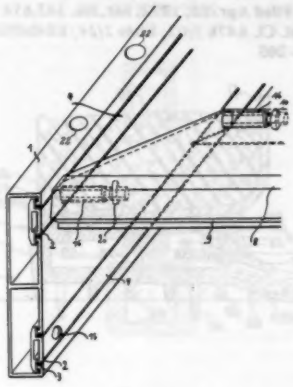
3,765,137

PREFABRICATED METAL STAIRCASE

Gilbert Loix, Chaussee Brunehaut 22, Wihogne, 4462 Belgium

Filed Nov. 26, 1971, Ser. No. 202,082
Claims priority, application Belgium, Dec. 22, 1970, 760,720
Int. Cl. F04f 11/12
U.S. Cl. 52—182 **13 Claims**

The present invention relates to a prefabricated metal staircase which may be assembled from structural members comprising extruded elements which may be made of aluminium. Staircases in accordance with the invention may serve as fixed permanent staircases or as temporary or emergency staircases and may be very versatile in view of the ease and rapidity with which they may be assembled and in view of their adaptability



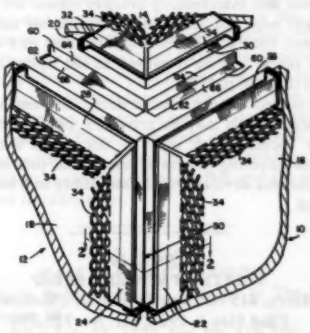
to provide whatever angle is required to meet the local situation.

3,765,138

CORNER CONTROL SYSTEM FOR PLASTER WALLS

Ralph W. Bentle, 1326 N. Audubon Rd., Indianapolis, Ind.

Filed July 8, 1971, Ser. No. 160,739
Int. Cl. E04b 1/56, 1/68
U.S. Cl. 52—255 **12 Claims**



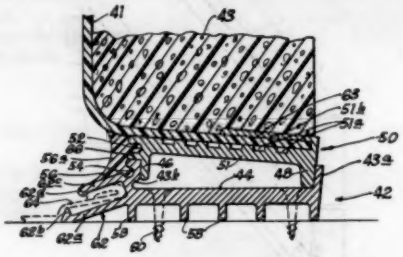
An expansion joint system for corners of plastered walls comprising a pair of angularly related and allochirally arranged casing beads extending longitudinally along and defining such a corner, the casing beads providing outwardly extending first flange portions terminating in close adjacency to define a corner seam and a corner space. A longitudinally extending connector member having an L-shaped cross section is disposed within the corner space defined by the first flange portions, this member having a longitudinally extending apex and inwardly and longitudinally extending leg sections, one of the leg sections abutting each first flange portion and the apex being disposed in close adjacency to the seam. Each casing bead also provides a clip portion positioned and arranged to engage and hold the adjacent leg section against its said first flange portion.

3,765,139

MODULAR CONSTRUCTION FOR BATHROOMS

Robert L. Litvin, Chicago, and Giorgio I. Spadaro, Evanson, both of Ill., assignors to Robert L. Litvin and Louis L. Marino, both of Chicago, Ill., part interest to each

Filed Apr. 13, 1972, Ser. No. 243,614
Int. Cl. A47k 3/02; E04c 2/24; E04b 2/00
U.S. Cl. 52—205 16 Claims



A construction for a bathroom or powder room within which plumbing fixtures are to be enclosed and supported upon or above a floor for providing an attractive room interior and flexibility of location of plumbing accessories. The bathroom includes: a peripheral track secured to the floor and positioned in a substantially horizontal plane, and at least four wall panels, two of which are end-wall panels and at least two of which are side-wall panels. All of the panels are fabricated of a moldable shape-sustaining material, such as plastic. The bottom edge of each panel has a continuous extruded bracket mounted thereto for matingly engaging said track for positioning and restraining the lower portion of the wall panels. Each panel is provided with two generally upright edges which extend transverse to the plane of the bottom edge. These upright edges are of substantially the same size so as to permit alignment thereof and interlocking bracket means are mounted to each upright edge for releasably interlocking said panels. A ceiling panel, substantially of the same size and shape as the peripheral track, can be mounted to the upper edges of the plurality of the wall panels.

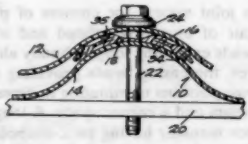
In order to provide the desired decorative and structural effects the wall panels may be provided with an intended subportion or recess which may be decorated with adhesive-backed wall covering. These recesses also provide shoulders on which various devices which find utility in a bathroom can be mounted.

3,765,140

WEATHER SEALING STRIP

Henry A. Harry, 415 N. Country Club Dr., McHenry, Ill.

Filed May 1, 1968, Ser. No. 725,796
Int. Cl. E04f 13/15
U.S. Cl. 52—409 5 Claims



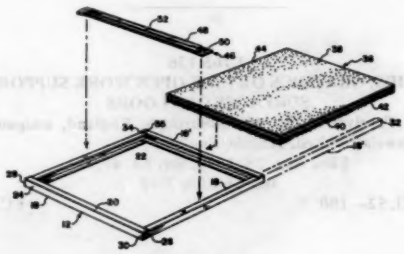
Disclosed herein is a sealing strip for use as a compressible sealing element between overlapped portions of panel structures, said strip comprising an elongate web of deformable elastomeric material having a number of deformable fins disposed on directly opposite sides of said web to form a plurality of chevron type seals extending longitudinally along each side of said body in transversely spaced relation and being sealingly engageable with the confronting faces of the overlapped portions of the panels, said strip including a pressure sensitive adjesive stripe on one surface of said web with a paper tear tape provided on said adhesive stripe.

3,765,141

DECORATIVE ACOUSTICAL PANEL

Harry I. Shayman, 777 N. Michigan Ave., Chicago, Ill.

Continuation-in-part of Ser. No. 130,611, April 2, 1971, Pat. No. 3,706,171. This application Nov. 22, 1971, Ser. No. 200,752
Int. Cl. E04b 5/52; E04c 2/38
U.S. Cl. 52—475 14 Claims



A decorative acoustical ceiling panel is disclosed comprising a rigid rectangular frame member having a rectangular layer of carpeting material held peripherally therein and provided with a backing of fire-resistant reinforcing composition including integral reinforcing members to provide a flat, sagproof panel. The panels are adapted to be assembled with other like panels in edge-to-edge relationship in a suitable ceiling installation and provide the appearance of a blanket of carpeting covering the ceiling. Mounting means in the form of hook members comprising extensions of the reinforcing members extend from the upper edges of the frame member for mounting the panels on support members suspended from a ceiling. A method of fabricating the panels is also disclosed which imparts the desired rigidity without buckling and with the use of the least amount of reinforcing cement.

3,765,142

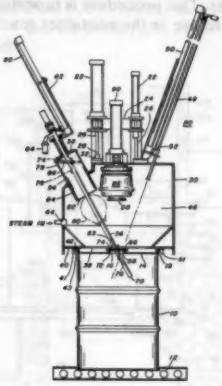
METHOD AND APPARATUS FOR ASEPTICALLY FILLING DRUMS

Steven M. Lindquist, Pittsburgh; Kenneth A. Baker, McKeesport; Elmer E. Harris, Glenshaw, and Kenneth W. Wineberg, Pittsburgh, all of Pa., assignors to J. H. Heinz Company, Pittsburgh, Pa.

Filed Aug. 24, 1972, Ser. No. 283,353
Int. Cl. B65b 31/06, 55/10
U.S. Cl. 53—11 20 Claims

A method and apparatus for aseptically filling drums with flowable liquids such as fruit or vegetable juices. A steam atmosphere is provided within the drum and within a filling head engaged wth the drum top, and a condensate removal lance and filling lance are mounted on the filling head and movable into and out of the drum with a diaphragm seal means also movable into sealing engagement in the drum opening about the filling lance which extends through the drum opening during the filling operation. The seal means minimizes the con-

densation of steam from the filling head within the drum during the filling operation and permits maintenance of an above



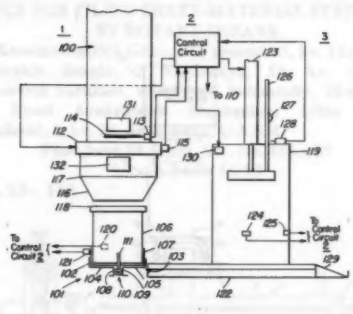
atmospheric pressure steam atmosphere in the filling head at all times.

3,765,143

COMPACTING SYSTEM AND METHOD OF COMPACTING

Amos D. Ippolito, Brooklyn, and William Y. L. Ma, Yonkers, both of N.Y., assignors to Environmental Pollution Research Corporation, New Hyde Park, N.Y.

Division of Ser. No. 847,567, Aug. 5, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,710
Int. Cl. B65b *1/24*
U.S. Cl. 53—24 8 Claims



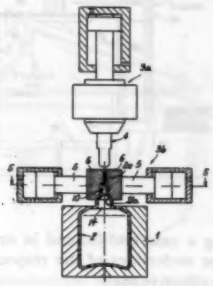
A container is located below a refuse chute and a gate in the chute is opened to allow refuse to discharge from the chute into the container and the gate is closed after a predetermined time. The container is then moved to a compacting station wherein the refuse in the container is compacted. If the compacted refuse is below a predetermined level in the container, the container is moved back below the chute and the gate opened to allow further refuse to fall within the container. This procedure is repeated until the level of the compacted refuse in the container reaches a predetermined level. Then the full container is ejected from the system, an empty container is moved below the chute and the gate is opened as above to allow further refuse to fall in the empty container.

3,765,144

METHOD FOR CLOSING PLASTIC CONTAINERS

Gabriel Schiesser, Netstal, Switzerland, assignor to Maschinenfabrik und Giesserei Netstal AG, Netstal, Switzerland

Filed Apr. 5, 1971, Ser. No. 131,085
Int. Cl. B65b *7/00*
U.S. Cl. 53—39 5 Claims



A plastic container is molded to form an elongated spout or neck portion and the spout is closed by first heating the entire interior circumference by applying a heater into the interior of the spout. The heating is completed around the circumference adjacent the outer end or top of the spout and an additional heating is applied at two diametrically opposite locations in a contiguous zone extending toward the interior end of the spout. Thereafter the outer continuously heated top portion is pressed flat in a plane passing through the center to cause a welding and a flattening of the outer end of the spout and the formation of a tear flap which extends diametrically across the spout. This process leaves the remaining portion which is partly flattened to form an upper removable tip which remains secured to the tear flap. The area immediately below this tip is flared or formed conically inwardly to provide for a change from the widened diameter lower portion of the spout to a smaller diameter tip portion. The pressure which is applied from opposite sides is carried out by means of oppositely acting ram heater members or jaws having specially shaped cavities to form the desired tear flap, nozzle tip portion, and transition portion between the nozzle spout wide diameter portion and the tip portion. The ram heaters each include means for forming transversely or diametrically extending weakened lines to facilitate the tearing off of the flap and the nozzle tip in order to open the container.

3,765,145

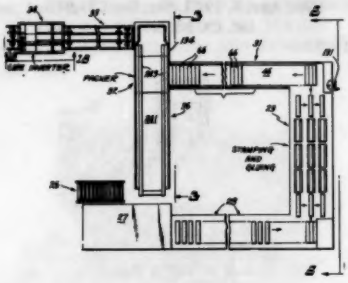
CASE PACKING MACHINE

Allan C. Davis, Baltimore, Md., assignor to The Meyercord Co., Wheaton, Ill.

Filed Feb. 25, 1971, Ser. No. 118,770
Int. Cl. B65b *57/14*
U.S. Cl. 53—61 12 Claims

This disclosure deals with a packing machine for packing or filling an empty case with a stack of articles such as cigarette cartons. The cartons are received from a cigarette tax stamping machine which opens the flaps on one side of each carton, affixes a tax stamp to each package, and applies glue to the opened flaps for resealing the cartons. The packing machine includes a case positioning tower which receives empty cases and successively positions the cases on a loading platform. A plurality of cartons are stacked in tiers in a magazine with the glued flaps extending upwardly, and are moved by a pusher assembly into an empty case on the loading platform, thus filling the case. The height and width dimensions of the magazine are adjustable in order to accomodate cartons of different lengths and thicknesses and the tower includes means for centering each case, regardless of width, on the platform. An ejector assembly is provided to move a case off the loading platform

after it has been filled and position another empty case on the loading platform for filling. In addition, the apparatus includes



means for turning a case end-for-end in order to place the glued flaps on the undersides of the respective cartons and thereby obtain an effective seal.

3,765,146

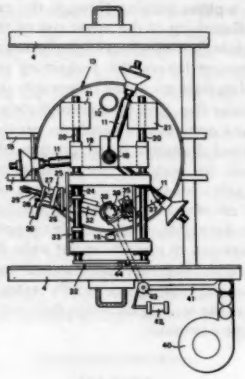
DEVICE FOR SEALING CONTAINERS HAVING AN ECCENTRICALLY LOCATED POURING SPOUT

Aldo Ghiretti, Basilicagoiano, Italy, assignor to OCME Officina Construzionimeccaniche Emiliana S.r.1, Parma, Italy

Filed Mar. 6, 1972, Ser. No. 232,162

Int. Cl. B65b *57/02, 7/28*

U.S. Cl. 53—67 **4 Claims**



A device for applying stoppers or stoppering seals to containers having an ecdentrically mounted pouring spout is disclosed, in which a motive unit which can be displaced between an operative and an inoperative position, and vice versa, carries a sensing member intended to scan the position of the pouring spout so as to set the stoppering or sealing unit proper in the exact position for sealing the container. The operation of such a machine can be completely automatized.

3,765,147

COMPACTING SYSTEM

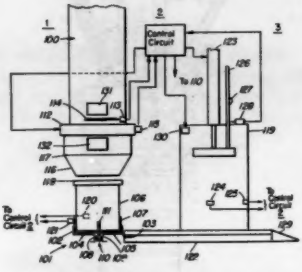
Amos D. Ippolito, Brooklyn, and William Y. L. Ma, Yonkers, both of N.Y., assignors to Environmental Pollution Research Corporation, New Hyde Park, N.Y.

Continuation-in-part of Ser. No. 847,567, Aug. 5, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,708

Int. Cl. B65b *1/24*

U.S. Cl. 53—124 B **22 Claims**

A container is located below a refuse chute and a gate unit in the chute is opened to allow refuse to discharge from the chute into the container. The container is then moved to a compacting station wherein the refuse in the container is compacted. If the compacted refuse is below a predetermined level in the container, the container is moved back below the chute and the gate unit opened to allow further refuse to fall within the container. This procedure is repeated until the level of the compacted refuse in the container reaches a predetermined level. Then the full container is ejected from the system, and empty container is moved below the chute and the gate unit is operated as above to allow further refuse to fall in the empty container. The gate unit may be operated in response to refuse falling. Alternatively, the apparatus is operated by means of a timer at predetermined times.



3,765,148

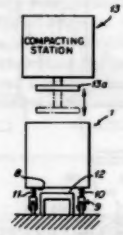
CONTAINERS AND LINERS FOR USE IN COMPACTING SYSTEMS OR THE LIKE

Amos D. Ippolito, Brooklyn, and William Y. L. Ma, Yonkers, both of N.Y., assignors to Environmental Pollution Research Corporation, New Hyde Park, N.Y.

Continuation-in-part of Ser. No. 847,567, Aug. 5, 1969, abandoned. This application Aug. 13, 1971, Ser. No. 171,709

Int. Cl. B65b *1/24*

U.S. Cl. 53—124 B **8 Claims**



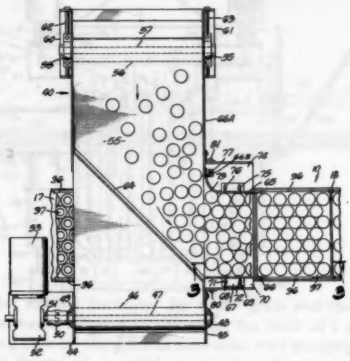
A container for use with a compacting system includes spring loaded rectractable wheel mechanism on the bottom thereof to facilitate handling of the container. The wheels are automatically retracted during the compaction operation due to the pressure of compaction. A liner to enable disposable bags to be more expeditiously used is preferably square in shape and is fabricated of plastic material or the like. Located between the liner and an outer container is a disposable bag. After compaction is complete a portion of the container is swung open and the liner deforms due to residual compression force in the compacted material. This releases the compacted material from the liner and enables the liner to be easily lifted out, the result being that the compacted material remains in the disposable bag, the liner having protected the bag during compaction.

3,765,149

SEMIAUTOMATIC TRAY PACKER FOR FRUIT

Aaron James Warkentin, 23561 E. Dinuba Ave., Dinuba, Calif.

Filed June 1, 1971, Ser. No. 148,391
Int. Cl. B65b 5/10, 35/32
U.S. Cl. 53—160 3 Claims



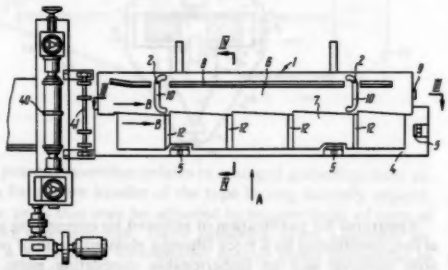
An endless conveyor belt is driven by a variable speed motor to convey empty trays having a plurality of pockets formed therein for the reception and packing of fruit. This conveyor is inclined upwardly from vertical at a small acute angle. A second endless conveyor is arranged to intersect the first conveyor and convey fruit thereto. The second conveyor is tilted to cause fruit thereon to accumulate on one side thereof and a chute is formed in that side and over the first belt. This chute extends downwardly at a small acute angle. The end of the chute terminates close enough to the first belt so that fruit falling off of the chute immediately contacts a previous fruit already in a pocket and is directed into the proper empty pocket.

3,765,150

DEVICE FOR PILING SHEET-MATERIAL STRIPS CUT BY ROTARY SHEARS

Vitaly Konstantinovich Gilev, 811 proezd 65, kv. 16; Alexandr Sergeevich Bragin, 7 Nagornaya, 14, kv. 1; Rafael Tevosovich Sarkisov, ulitsa Aga Neimatully, 20-a, kv. 28, and Ernst Arakelovich Stephanian, ulitsa Druzhby Molodezhi, 2, kv. 36, all of Baku, U.S.S.R.

Filed June 24, 1971, Ser. No. 156,407
Int. Cl. B65b 35/50
U.S. Cl. 53—162 4 Claims



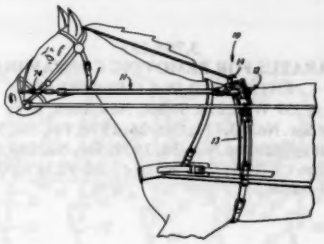
The inclined receiving table in the device is divided at least into two longitudinal portions, of which the movable one is installed lower than the other, fixed portion, with a provision for moving under the latter in synchronism with the movement of the pusher knockouts while the piling table is installed under the movable portion, parallel to it, with a provision for being lowered as the container becomes gradually filled with strips.

3,765,151

HEAD POLE SUPPORT FOR HORSE HARNESS

George E. Hall, 8317 Lovers Ln., Portage, Mich.

Filed Mar. 13, 1972, Ser. No. 233,906
Int. Cl. B68b 1/00
U.S. Cl. 54—71 10 Claims



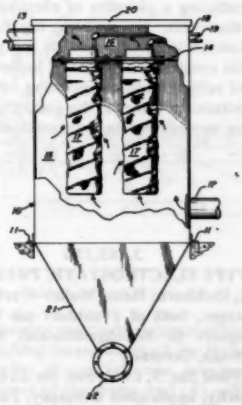
A head pole attachement adapted to be connected to the harness of a horse for preventing lateral or sidewise movement of the horse's head. The attachment includes an elongated telescoping pole which has the front end thereof positioned adjacent one side of the horse's head, with the rearward end thereof being mounted to a portion of the harness, particularly the back pad. A bracket structure is releasably mounted on the back pad between the water check hook and one of the line guide rings. A universal-type coupling is mounted on the bracket and is laterally adjustable along the bracket for selectively positioning same at any desired location between the water check hook and the line guide ring. The universal coupling has means for permitting it to be easily detachably connected to the rearward end of the pole, thereby enabling the pole to pivotally swing relative to the back pad about two substantially perpendicular axes. The pole has a spring-urged locking sleeve mounted on the rearward end thereof for permitting the pole to be releasably pivotally connected to the coupling device.

3,765,152

CLEANING OF FILTERING MEDIA

Josef Pausch, Hopkins, Minn., assignor to General Resource Corporation, Hopkins, Minn.

Filed Nov. 4, 1970, Ser. No. 86,703
Int. Cl. B01d 46/04
U.S. Cl. 55—96 8 Claims



This invention provides an improved method and apparatus for maintaining the permeability of the porous filtering media used in filtering a gaseous suspension by providing an ever-open passage disposed in the path of fluid flow which, in turn,

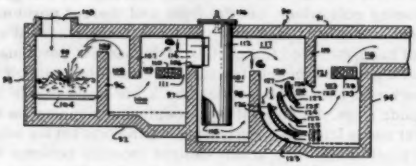
receives at an intermediate area the injection of compressed gas having the dual function of terminating normal flow through the passage, and providing a reverse flow by inducing other gaseous fluid into the ever-open passage to dislodge accumulated solids from the filtering media.

3,765,153

APPARATUS FOR REMOVING CONTAMINANTS ENTRAINED IN A GAS STREAM

Jerry Grey, 359 West 21st Street, New York, N.Y.

Division of Ser. No. 83,711, Oct. 26, 1970, Pat. No. 3,656,440.
This application Nov. 30, 1971, Ser. No. 203,336
Int. Cl. B03c *3/78;* **B01d** *47/06;* **F23g** *5/00*
U.S. Cl. 55—118 **9 Claims**



An incinerator generally including a combustion chamber, a flue, means for conducting combustion gases emanating from the combustion chamber to the flue, the conducting means including passage means for imparting a curved motion to the combustion gases, means disposed in the passage means for producing a plurality of electrostatic fields including a plurality of sets of spaced electrodes, each set of electrodes producing an electrostatic field through which a portion of the gases traverse, and means disposed either upstream relative to the means for producing a plurality of electrostatic fields, or in conjunction therewith, for ionizing the combustion gases, whereby contaminants including solids and gaseous molecules entrained in the combustion gases will be ionized by the ionizing means and subjected to cooperating centrifugal, electrostatic and gravitational forces as the gases traverse through the passage means to remove the contaminants from the combustion gases.

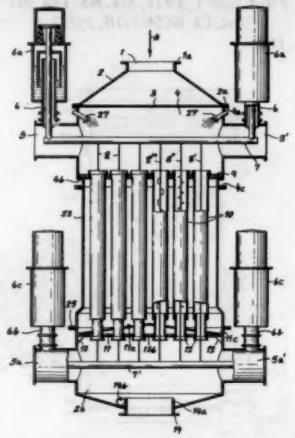
3,765,154

TUBE-TYPE ELECTROSTATIC PRECIPITATOR

Lothar Hardt, Eschborn; Heinz Muller-Wartenberg, and Hans Rauschenberger, both of Frankfurt am Main, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt/Main, Germany

Filed Jan. 3, 1972, Ser. No. 214,740
Claims priority, application Germany, July 10, 1971, P 21 34 576.6
Int. Cl. B03c *3/49*
U.S. Cl. 55—146 **10 Claims**

A tube-type electrostatic precipitator in which the interior of a tube is provided with a film of conductive liquid to which the particles are attracted and which surrounds a corona discharge electrode. The outside of the tube is provided with



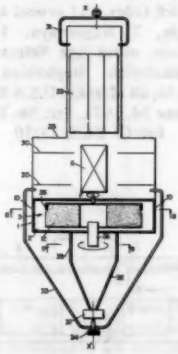
fiberglass-reinforced synthetic-resin bands while the interior of the tube is sandblasted or otherwise roughened to a minimum roughness of 15 microns.

3,765,155

APPARATUS FOR THE SUCTION AND PURIFICATION OF POLLUTED AIR

Paul Courbon, Verneuil-en-Halatte, France, assignor to Charbonnages De France, Paris, France

Filed Apr. 6, 1970, Ser. No. 25,690. The portion of the term of this patent subsequent to July 6, 1988, has been disclaimed.
Claims priority, application France, Apr. 4, 1969, 6910595; Mar. 5, 1970, 7007988
Int. Cl. B01d *53/30*
U.S. Cl. 55—270 **15 Claims**

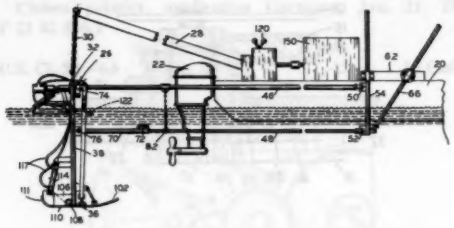


Apparatus for purification of polluted air comprising a radial fan, constituted by a thick filtering element made of permeable material and an impermeable supporting plate fixed together for rotation and rotating at a high and preferably constant speed in the interior of a closed sampling chamber provided with a suction orifice located on the filter side and with evacuation orifices situated on the supporting plate side, the sections of the suction orifice, the evacuation orifices and the sampling chamber having values such that the suction flow is less than the actual flow-rate of the radial fan.

3,765,156
TURTLE GRASS HARVESTER

Wellington W. Porter, I.R.D. No. 2, Dublin Rd., Waterloo, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,816
Int. Cl. A01d *45/08*
U.S. Cl. 56—8 5 Claims

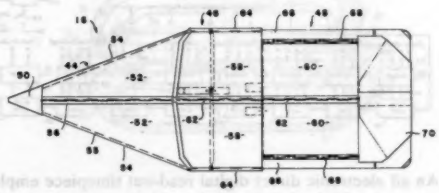


Underwater marine harvester for turtle grass and the like having a transverse member mounted on the deck of a vessel and extending beyond the sides of the vessel with an upright at each end, a frame of a width approximately the spacing between said uprights, parallelogram pull linkages including the uprights and frame for drawing the frame through the water, a sickle bar cutter disposed across the bottom of said frame and facing toward the transverse member, power means for actuating said cutter, means for raising and lowering the frame, a plurality of shoes pivotally attached to the frame and disposed behind the cutter, power means for setting the angle of said shoes, and a transverse wing extending across and pivoted to the frame, and power means for setting the angle of the wing.

3,765,157
HINGED GATHERING SHEET ASSEMBLY FOR A CORN HEADER

Myles Hyman; Ronald T. Sheehan, and Edward W. Rowland-Hill, all of Lancaster, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 13, 1972, Ser. No. 288,853
Int. Cl. A01d *45/02*
U.S. Cl. 56—119 13 Claims

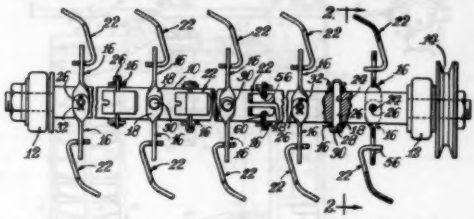


The present invention relates to a hinged gathering sheet assembly for a corn header of the type having laterally adjustable row units that may be adjusted to harvest fields of corn of different row spacings. Each gathering sheet assembly includes a plurality of fore-and-aft spaced panel assemblies in which individual panels of each panel assembly are pivotally connected to a respective panel by a hinge type construction. The gathering sheet assembly is generally disposed between respective row units and because of the hinge construction of the panel assemblies comprising the gathering sheet assembly, the gathering sheet assembly may expand and contract in response to the lateral adjustment of the particular row unit.

3,765,158
MEANS FOR CONNECTING A BLADE TO A MOWER SHAFT

Carl W. Mott, Lake Ozark, Mo., assignor to Mott Corporation, LaGrange, Ill.

Filed Dec. 28, 1970, Ser. No. 101,747
Int. Cl. A01d *55/22*
U.S. Cl. 56—294 10 Claims

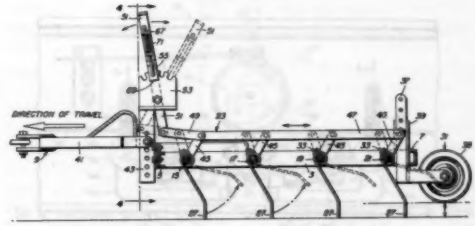


Means for connecting a blade to a mower shaft, comprising a member removably secured to the shaft and adapted to carry a blade which extends generally radially from the shaft when the shaft is rotated. The member is bifurcated, having a pair of arms embracing the shaft and may be pivotally secured thereto, and having a center portion joining the arms and to which a blade is adapted to be loosely secured. The member is secured in openings in the shaft by pin means which are either separate from, or integral with, the member. In the latter case, the member is elastically distorted from its normal shape to install the pin means of the member on the shaft, and the member then returns to its normal shape to retain the member on the shaft.

3,765,159
THATCH REMOVAL DEVICE

Dean O. Neff, 1318 Washington Street, Rochester, Ind.

Filed Oct. 16, 1972, Ser. No. 297,672
Int. Cl. A01d *77/00*
U.S. Cl. 56—396 8 Claims



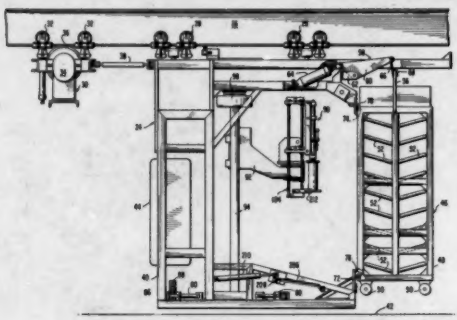
A device for removing thatch from lawns comprising (1) a rigid frame, (2) hitching means to attach the frame to a prime mover, (3) a plurality of parallel cross members extending between side members of the frame and (4), affixed to each cross member, a series of downwardly extending tines, which series is staggered with respect to the series on the preceding and following cross members, the ends of the tines being bent forwardly by an angle of from about 20° to about 40° from the perpendicular.

3,765,160

MECHANIZED BOBBIN HANDLER

Thomas J. Bethea, and Joe L. Ritchie, both of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed May 28, 1971, Ser. No. 147,951
Int. Cl. D01h 9/10
U.S. Cl. 57—53 17 Claims



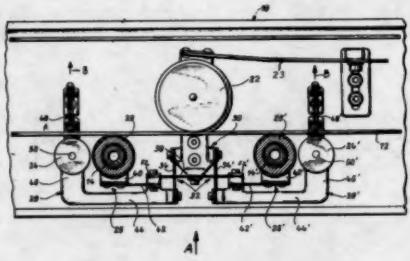
Method and apparatus for automatically removing filled bobbins from spindles spaced apart along the length of a spinning machine. The bobbin handling apparatus includes a carriage that moves along the length of the spinning machine and in timed sequence removes a plurality of filled bobbins from their spindles, transfers the filled bobbins to a rack or bobbin transporter, picks up a plurality of empty bobbins, transfers the empty bobbins to the previously doffed spindles, and then travels to the next position, where the process is repeated. The carriage includes guide means to position precisely the rack with respect to the spindles.

3,765,161

BRAKE MECHANISM FOR SPINNING AND TWISTING MACHINES

Gisbert Kohler, Stuttgart, Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed Oct. 5, 1971, Ser. No. 186,735
Claims priority, application Germany, Oct. 6, 1970, P 20 48 959.2
Int. Cl. D01h 7/22
U.S. Cl. 57—88 10 Claims



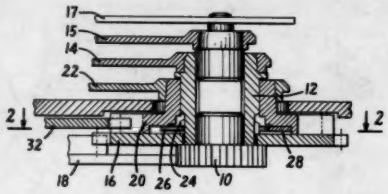
A mechanism for disengaging the drive of the spindles of a spinning machine in which the spindles are individually driven by a tangential drive belt. The mechanism comprises a carrier on which there is mounted a roller for lifting the belt. The carrier is connected, at one end, to a fixed support by resiliently flexible means and at the other end to link means by which it may be moved causing the roller to move into operative contact with the belt lifting the same out of engagement with the spindle. A brake element may be independently mounted for engagement with the spindle, or as is preferred mounted on the carrier for simultaneous operation.

3,765,162

WATCH INDICATING MANY TIMES

Takao Ushiyama, Okaya; Masato Shinohara, and Toshimasa Ikegami, both of Chino, all of Japan, assignors to Kabushiki Haisha Suma Seikosha, Tokyo, Japan

Filed Feb. 3, 1972, Ser. No. 223,101
Claims priority, application Japan, Feb. 5, 1971, 46/4254
Int. Cl. G04b 19/22, 19/24
U.S. Cl. 58—42.5 8 Claims



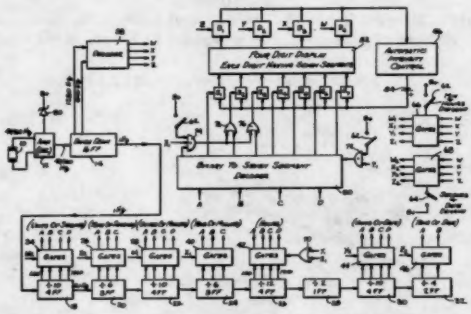
A watch having a plurality of time displays includes a first time display having a first indicating member operated by the watch to indicate the time and a second time display having a second indicating member to indicate another time. An adjustment means for adjusting the time displays has one operable position for simultaneously adjusting the first and second indicating members and another operable position for adjusting the second indicating member independently of the first indicating member.

3,765,163

ELECTRONIC TIMEPIECE

Morris Meyer Levine, Scarsdale, and Arthur Fischer Cake, Smithtwon, both of N.Y., assignors to Uranus Electronics Inc., New Rochelle, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,608
Int. Cl. G04b 19/30, 27/00
U.S. Cl. 58—50 R 15 Claims



An all electronic direct digital read-out timepiece employing a matrix of light emitting diodes which are user actuated to provide a display of the time in response to their actuation. A first demand switch provides a display of hours and minutes. A second demand switch provides a display of time in seconds using the same light emitting diodes as are used for the first display. When the display is turned on, it cycles through three levels of light intensity each lasting a predetermined time period of approximately one second after which the display automatically turns off. The time is set through the actuation of a single time setting switch in addition to the display demand switch. Through successive manipulations of the display demand switch, the time may be set at any predetermined value in advance of the real time, time keeping may be suspended until the real time catches up with the time set, and when the time set is coincident with real time time keeping

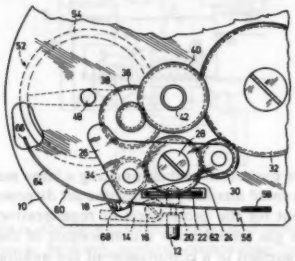
may be reinstated. The design of the system provides for minimum current drain so that a small watch having reasonable battery life is provided.

3,765,164

DEVICE TO STOP TIMEPIECE BALANCE WHEELS

Fred H. Esselborn, Pforzheim, Germany, assignor to Timex Corporation, Waterbury, Conn.

Filed Jan. 11, 1973, Ser. No. 322,675
Claims priority, application Germany, Jan. 21, 1972, P 22 02 846.2
Int. Cl. G04b 27/02, 27/00
U.S. Cl. 58—63 15 Claims



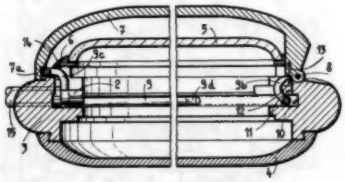
A horological movement, such as an electrical or mechanical watch, has an elongated resilient spring which is secured to a base plate at one of its ends. The spring is operated by a stem and acts to bias a cock and also to selectively stop a balance wheel assembly.

3,765,165

WATCH CASE COVER SPRING

Georges Vial, Payerne, Switzerland, assignor to Elvico S.A., Vaud, Switzerland

Filed Sept. 11, 1972, Ser. No. 287,913
Int. Cl. G04b 37/00
U.S. Cl. 58—101 4 Claims



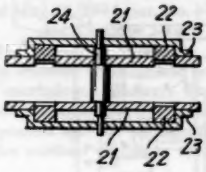
A watch case comprising an articulated cover and a wire or strip-spring carried by the case body having the shape of an arc of a circle, which acts as an elastic return member tending to open the cover and as a closing member tending to maintain it closed, the spring being provided with two portions bent out of its plane, the first one of which bears on a bearing surface of the cover situated in the vicinity of its articulation on the case body and thus tends to open the cover, and the second one of which is bent towards the outside and is engaged with the cover to keep it closed, the case carrying a pusher which acts on the second bent portion of the spring for moving it towards the center of the watch case and thus unlock the cover which opens under the effect of the first bent portion of the spring.

3,765,166

BALANCE CONSTRUCTION FOR ELECTRONIC TIMEPIECES

Hirohisa Kurita; Hiroaki Fujimori, and Yasuo Fujisawa, all of Shimosuwa-machi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,437
Claims priority, application Japan, Dec. 29, 1971, 46/1877
Int. Cl. G04c 3/04; G04b 17/00
U.S. Cl. 58—107 7 Claims



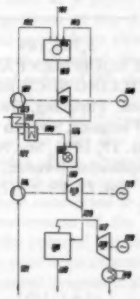
A balance having a pair of essentially parallel balance wheels mounted on a common shaft for oscillation, and having permanent magnets mounted on said balance wheels, is provided with magnetic yoke members on each of said balance wheels formed with recesses for receiving said permanent magnets, the depth of said recesses being at least more than one-half the thickness of the permanet magnets. Further, said permanent magnets are positioned so that the distance between facing permanent magnets is equal to more than the least distance between the balance wheels.

3,765,167

POWER PLANT PROCESS

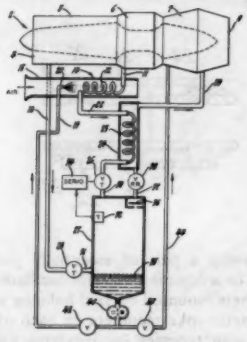
Paul Rudolph, Bad Homburg, and Ernst Kapp, Frankfurt am Main, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 66,257, Aug. 24, 1970. This application Mar. 6, 1972, Ser. No. 232,210
Int. Cl. F01k 25/08, 23/00, 23/10
U.S. Cl. 60—39.02 7 Claims



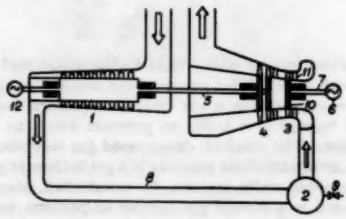
In a turbine power plant, fluid hydrocarbon fuel is first cracked with steam under pressure; the cracked compressed gas is then expanded in a gas turbine to perform work and thereafter burned in a boiler to generate steam to drive a steam turbine. The cracked, compressed gas may also be expanded to an intermediate pressure in a gas turbine to perform work, combusted under pressure, the combusted, compressed gas expanded in a second gas turbine to perform work and then fed to a boiler where the heat of the combusted gas is utilized to generate steam to drive a steam turbine. The cracked, compressed gas may also be fully expanded in a gas turbine to perform work and thereafter combusted and a portion of the hot combustion gas therefrom is fed to a boiler to generate steam to drive a steam turbine and the balance is recycled to an externally heated cracker and then to the boiler.

3,765,168
WATER RECOVERY
Joseph A. Wagle, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 24, 1972, Ser. No. 283,476
Int. Cl. F02c 3/06, 7/16
U.S. Cl. 60—39.02 6 Claims



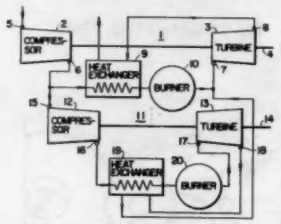
A system and method for recovering clean water from the air flowing into and through a gas turbine engine. Low pressure air drawn from the engine compressor is fed to a receiver. Compressed air from a higher stage of the compressor is cooled by atmospheric air which may be previously spray-cooled. The compressed air is further cooled by heat exchange with exhaust air from the system, and then expanded to further cool the air and lower its pressure. The two flows of air are then mixed in a receiver about 0°C. to precipitate water from the mixed air flow. The water collected in the receiver is used for cooling the turbine of the engine and also, if desired, for spray cooling the atmospheric air referred to above. The air discharged from the receiver is used to cool the compressed air and then discharged to exhaust.

3,765,169
GAS TURBINE EQUIPMENT AND METHOD OF CONTROLLING SUCH EQUIPMENT
Ben Harald Kyrklund, Finspang, Sweden, assignor to Stal-Laval Turbin AB, Finspang, Sweden
Filed Dec. 17, 1971, Ser. No. 209,120
Claims priority, application Sweden, Feb. 1, 1971, 1175/71
Int. Cl. F02c 3/10
U.S. Cl. 60—39.16 R 3 Claims



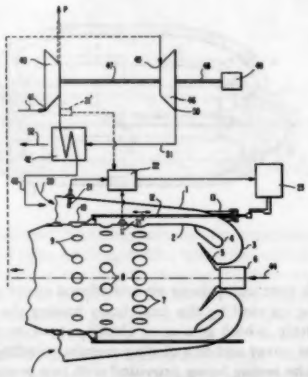
A multiple-rotor gas turbine engine comprising a turbocompressor, a combustion chamber and a turbine having a high pressure part and a low pressure part, the low pressure part driving the turbocompressor while the high pressure part delivers the output power.

3,765,170
COMPOSITE GAS TURBINE SET
Kenya Nakamura, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi-ken, Japan
Filed Dec. 15, 1971, Ser. No. 208,130
Claims priority, application Japan, Dec. 27, 1970, 45/126239
Int. Cl. F02c 3/18, 1/06
U.S. Cl. 60—39.17 2 Claims



A composite gas turbine set comprising a large main gas turbine set and a small auxiliary gas turbine set disposed in parallel arrangement for the production of regenerative cycles. A portion of the gas issued from a compressor of the main gas turbine set is applied to a compressor of the auxiliary gas turbine set. The exhaust gas which has provided regeneration in the auxiliary gas turbine set is applied to the turbine of the main gas turbine set. The composite turbine set is arranged so as to minimize increases in fuel consumption under widely variable load conditions.

3,765,171
COMBUSTION CHAMBER FOR GAS TURBINE ENGINES
Hermann Hagen, Dachau; Peter Tartaglio, and Adolf Fehler, both of Puchheim, all of Germany, assignors to Motoren-und Turbinen-Union Munich GmbH, Munich, Germany
Filed Mar. 11, 1971, Ser. No. 123,164
Claims priority, application Germany, Apr. 27, 1970, P 20 20 416.4
Int. Cl. F02c 9/14, 7/10
U.S. Cl. 60—39.23 30 Claims



Combustion chamber for gas turbine engines including a flame tube provided with metering openings for introduction of secondary air into the flame tube, a throttle ring which is axially or circumferentially moveable to adjust the size of the metering openings, and control means for actuating the throttle ring in response to temperature or pressure conditions in the engine.

3,765,172

MEANS FOR CONTROLLING OPERATION OF FLUID-PRESSURE OPERATED BOOSTERS

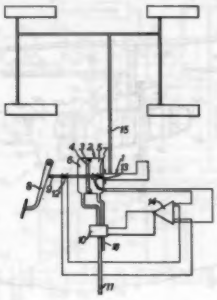
Harold Fineman, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed Feb. 11, 1972, Ser. No. 225,538

Claims priority, application Great Britain, Feb. 25, 1971, 5,471/71

Int. Cl. F15b *13/16, 9/03*

U.S. Cl. 60—545 10 Claims



Means for controlling operation of a fluid-pressure operated booster for a braking system comprising an electrically operated actuator valve energised by the output from an electronic control module. The control module compares signals from first and second force sensitive means adapted to sense respectively forces acting at any one time on an input member acting on a movable wall of the booster and on an output member on which the movable wall acts to augment a force applied to the input member.

3,765,173

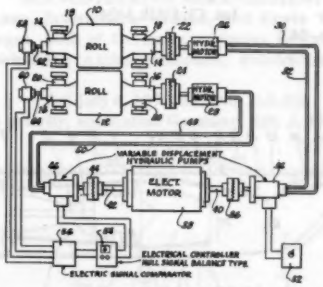
HYDRAULIC ROLL DRIVE MEANS FOR BRIQUETTERS AND COMPACTORS

Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed Sept. 28, 1971, Ser. No. 184,538

Int. Cl. F15b *11/22*

U.S. Cl. 60—97 E 10 Claims



An apparatus for agglomerating particulate material as in a briquetting or compacting construction. The improvement of the invention relates to drive means for the agglomerating rolls. The drive means include individual hydraulic motors for the rolls with separate or common pumps being employed in conjunction with the hydraulic motors. Detecting means may be connected to at least one of the roll shafts for thereby determining the relative angular positions of the rolls mounted on the shaft. Control means are operated by the detecting means so that momentary variations in the speeds of rotation of the rolls can be made to synchronize the rolls. The control system preferably comprises an automatic quick response arrangement so that the rolls are maintained at proper synchronization throughout the agglomerating operation.

3,765,174

METHOD FOR GENERATING A NONCONDENSIBLE GASEOUS FLUID COMPATIBLE WITH INTERHALOGEN OXIDIZERS USING PHOSPHONITRILIC CHLORIDE

Richard O. MacLaren, Sunnyvale, and Jack D. Breazeale, Palo Alto, both of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 25, 1971, Ser. No. 111,200

Int. Cl. C06d *5/10*

U.S. Cl. 60—220 7 Claims

Phosphonitrilic chloride ($PNCl_2$) and polymers thereof are hypergolic with interhalogen oxidizers. The gaseous products of this reaction are insoluble in and nonreactive with liquid interhalogen compounds and are suitable for use as the pressurizing media for oxidizer expulsion systems in rocket motors.

3,765,175

FLUID DRIVEN PROPULSION AND GENERATOR MECHANISM

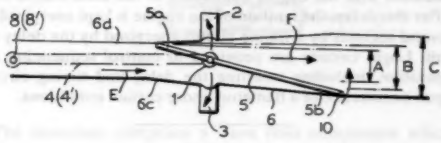
Jumpei Ohnaka, 9-37 Honmachi, Kurashiki, Japan

Filed Dec. 23, 1971, Ser. No. 211,244

Claims priority, application Japan, Dec. 30, 1970, 45/127919

Int. Cl. B63h *1/36*

U.S. Cl. 60—221 4 Claims



A duct is formed through a vessel. An electro-magnet is positioned around the duct at a point such that the poles thereof form opposed portions of the duct. A vane is positioned within the duct to move from side-to-side thereof and has a permanent magnet attached thereto in a position between the two opposed poles of the electro-magnet. At the rearward end of the vane there is provided an extension pole having a contact at the upper end thereof. This pole extends through the upper wall of the duct into an air tight chamber. Mounted on opposite sides of the chamber are a plurality of change-over terminals which are connected to a switching arrangement which is in turn connected to the coils of the electro-magnet such that movement of the contact operates to reverse the polarity of the poles of the electro-magnet. Alternatively, the pole of the vane is an extension of a shaft mounting the vane. The permanent magnet is attached to the top of this extension. A plurality of electro-magnets are arranged outwardly of the duct in a manner that movement of the permanent magnet will sequentially interrupt fields generated by the electro-magnets.

3,765,176

AUTOMATIC RELIGHT

Robert E. Nelson, and Oran A. Watts, III, both of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

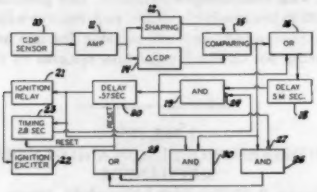
Filed Feb. 22, 1972, Ser. No. 227,811

Int. Cl. F02k *3/00*

U.S. Cl. 60—223 10 Claims

A system for automatically turning on the ignition of a gas turbine engine upon flameout, particularly applicable to a helicopter installation. The system responds to the relation of rate of decay of compressor discharge pressure (CDP) to the

level of CDP before flameout. The system discriminates against CDP transients due to compressor noise, and those caused by decreasing the engine power level, by establishing a curve of Δ CDP against CDP above which the magnitude of Δ CDP is sufficient to indicate a flameout. The CDP signal generated by a resistance bridge is fed through an operational amplifier to curve-shaping and differentiating circuits. The outputs of the shaping and differentiating circuits are compared in a second operational amplifier which energizes its output in response to an excess of Δ CDP over the established



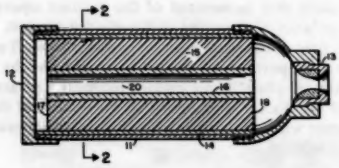
curve. The resulting signal is delayed for approximately 5 milliseconds to discriminate against short-lived transients and then transmitted to a delay circuit. The delay circuit delays ignition to allow for decay of torque transients following the flameout with the engine connected to the mass-elastic load. After this delay, the ignition of the engine is kept energized for several seconds by a timing circuit energized by the delay circuit. Logic circuits are provided to control sequencing and operation, including resetting the delay and timing circuits upon occurrence of a flameout under certain conditions.

3,765,177

ROCKET MOTOR WITH BLAST TUBE AND CASE BONDED PROPELLANT

Harold W. Ritchey, Huntsville, Ala., and John M. McDermott, Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Dec. 30, 1959, Ser. No. 857,642
Int. Cl. F02k *9/04*
U.S. Cl. 60—253 **5 Claims**



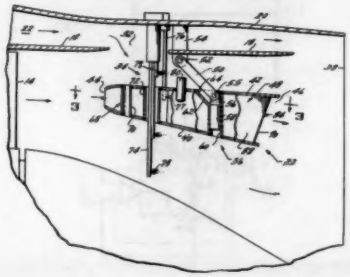
2. A multiple end-burning rocket comprising a motor casing closed at its forward end and having rearward nozzle means, at least one propellant charge therein case-bonded to said motor casing and having a plurality of end-burning surfaces, and a hollow blast tube extending through said propellant charge and to which said charge is bonded, said tube being expansible and contractible in response to changes in the dimensions of said propellant charge, and said blast tube comprising a cured mixture of a liquid bisphenol epoxide polymer and a liquid polythiopolymercaptan polymer.

3,765,178

AFTERBURNER FLAMEHOLDER

Robert Hughes Hufnagel, Marblehead; Lowell Jackson Pierce, Melrose, and Edward Joseph Sabol, Danvers, all of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Sept. 8, 1972, Ser. No. 287,281
Int. Cl. F02c *7/20, 7/22*
U.S. Cl. 60—261 **8 Claims**



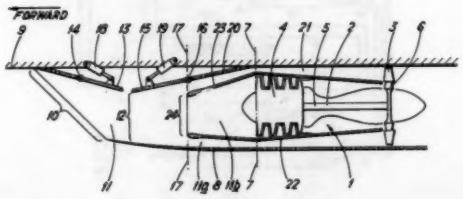
An afterburner flameholder for an aircraft gas turbine engine is provided with a continuous annular inlet together with a closely adjacent inlet screen to meter gas flow from the turbine exhaust to a plurality of discrete pilot fuel jets within the flameholder. The wake behind the inlet screen is highly turbulent and operates to minimize temperature gradients existing in the inlet flow. The annular inlet communicates with smooth and uniformly flared flow passages through the flameholder thereby inhibiting local variations in flow velocity which heretofore were caused by sudden disruptions in the flowpath.

3,765,179

PROPULSION POWER PLANT FOR AIRCRAFT

William John Strang, Abbots Leigh, and Hugh Arthur Goldsmith, Redland, both of England, assignors to British Aircraft Corporation Limited, London, England

Filed July 2, 1971, Ser. No. 159,180
Claims priority, application Great Britain, July 8, 1970, 33,055/70
Int. Cl. F02k *3/04*
U.S. Cl. 60—262 **2 Claims**



A propulsion power plant for use in a supersonic aircraft includes an aft-fan engine housed in a first duct which delivers air both to the aft-fan and to a further duct for delivery to the gas-generator portion of the engine, the intake of the further duct being positioned within the first duct so that it captures the relatively smooth airflow in the middle of the duct for delivery over a relatively short distance to the gas-generator, the relatively turbulent air at the edges of the first duct being delivered o the aft-fan over a relatively longer distance.

3,765,180

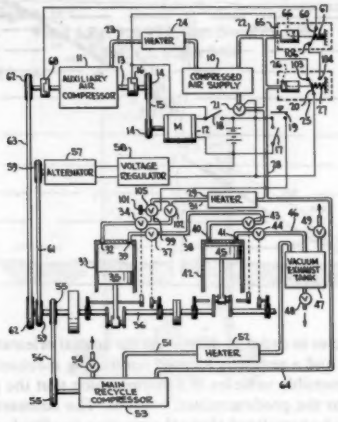
COMPRESSED AIR ENGINE

Russell R. Brown, 215 Lafayette St., Harrisburg, Pa.

Continuation-in-part of Ser. No. 113,014, Feb. 5, 1971, abandoned. This application Aug. 3, 1972, Ser. No. 277,629

Int. Cl. F15b *11/06, 3/00*

U.S. Cl. 60—370 9 Claims



Compressed air engine having an auxiliary air compressor for building up to a minimum a predetermined air pressure in a compressed air supply tank which feeds air through an engine RPM control valve for the engine pistons. Upon reaching the minimum air pressure, the electric motor is cut off and the auxiliary compressor is simultaneously engaged with the crankshaft to continue to build up to a maximum predetermined air pressure level and maintain this level for operation of the engine. A main recycle air compressor is provided for recycling. The multi-cylinder four-cycle combustion engine motor block may be converted into a four-cycle compressor for the system, and hydraulic means may also be used as a force-multiplying means for operation of the crankshaft.

3,765,181

SERVOSTEERING ARRANGEMENT

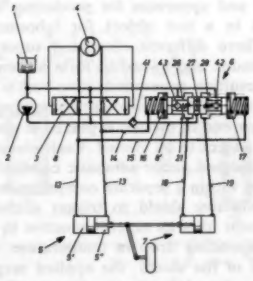
Armin Lang, Schwalbisch Gmund, and Erwin Wiedemann, Mutlangen, both of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed July 6, 1972, Ser. No. 269,460

Claims priority, application Germany, July 3, 1971, P 21 33 201.4

Int. Cl. F16h *39/48*

U.S. Cl. 60—386 7 Claims



An arrangement of power steering cylinders having connected pistons is provided wherein an engine operated servopump is utilized to pressurize the cylinders. Normally one cylinder is used, but in the vent of predetermined increase in steering resistance the other cylinder is automatically pressurized to aid in the steering force applied. A metering or control pump operated by the steering spindle conrols flow in the system from the servopump and can pressurize both cylinders in the event of failure of the servopump.

3,765,182

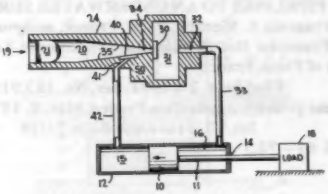
RESONANT CAVITY WAVE FLUID COMPRESSOR

Raymond W. Warren, McLean, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 26, 1972, Ser. No. 275,376

Int. Cl. F15b *15/18*

U.S. Cl. 60—412 10 Claims



The invention comprises a wave fluid compressor which consists essentially of a resonant cavity or whistle. As fluid flows within the cavity, pressure waves of high and low pressure are created. Specifically, when a high pressure compression wave is stopped at the closed end of the resonant cavity and then reversed the pressure doubles as the kinetic energy of the wave is converted into potential energy of pressure. When a high pressure compression wave exits from the cavity, it is followed by a rarefaction wave which flows to the closed end of the tube, reverses, and returns to be followed by another high pressure compression wave. In combination with the resonant cavity the invention further comprises check valves at the closed ends of the tube so that a portion of the high pressure may be withdrawn from one check valve, and a portion of the low pressure may be withdrawn through another check valve so as to provide an amplified differential pressure. The invention also comprises a taper within the resonant cavity such that the differential pressure is further increased thereby. The differential pressure extracted from the resonant chamber is utilized to move a mechanical load such as for moving a mechanical piston or the like.

3,765,183

CONTINUOUSLY VARIABLE HYDROSTATIC TRANSMISSION

Horst Baurle, Schwieberdingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 15, 1972, Ser. No. 280,902

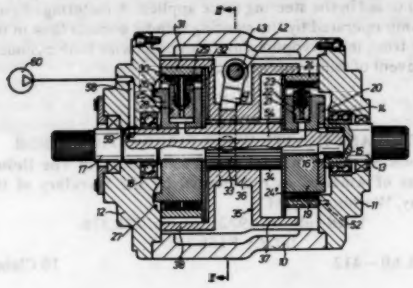
Claims priority, application Germany, Aug. 18, 1971, P 21 41 282.8

Int. Cl. F16h *39/16, 39/46*

U.S. Cl. 60—491 7 Claims

A hydrostatic transmission includes two axially aligned radial piston machines operating as a pump and motor, and having cylinder blocks secured to a housing and to an output shaft, respectively, and actuator rings whose eccentricities are

simultaneously adjusted by adjusting means surrounding the actuator means and connected therewith by cam slots and



cam followers so that power can be hydraulically and mechanically transmitted between the input and output shafts.

3,765,184

DEVICE AND METHOD FOR THE ATTACHMENT OF PIPELINES TO AN UNDERWATER SURFACE

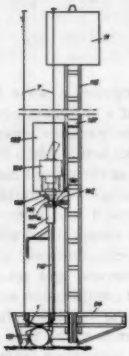
Louis Francois A. Menard, Paris, France, assignor to Compagnie Francaise Des Petroles and Techniques Louis Menard, both of Paris, France

Filed Sept. 27, 1971, Ser. No. 183,919

Claims priority, application France, Mar. 8, 1971, 7107866

Int. Cl. F16l *1/00*; B63b *21/26*

U.S. Cl. 61—72.3 **21 Claims**



An apparatus and a method of securing an underwater pipeline to the bed of a body of water is provided. A buoyant boom is attached to a floating line to be guided down to the pipeline. The floating line is secured to the pipeline by a clip that can utilize compressed air to penetrate the underwater bed. The buoyancy of the boom can be controlled to regulate both ascent and descent. A sled like base member is attached to the boom by a cardan joint and carries both a source of compressed air and a control panel. A television system can be utilized to monitor the control panel and the actual sinking of inverted L-shaped piles by a vibro-piledriver.

3,765,185

PIPELINE POSITIONING SYSTEM AND METHOD

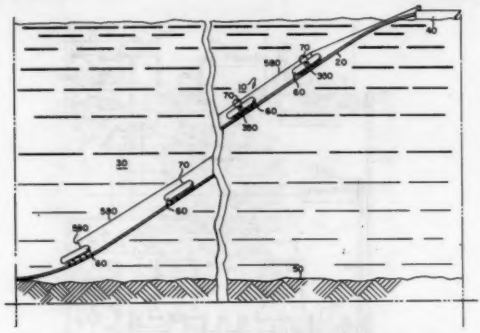
Ira J. Peck, Dresher, and Standish H. Smith, Penn Valley, both of Pa., assignors to Aqua Systems, Inc., Gladwyne, Pa.

Filed Dec. 22, 1971, Ser. No. 211,016

Int. Cl. F16l *1/00*; B63b *35/04*

U.S. Cl. 61—72.3 **33 Claims**

A pipeline positioning system and method of accomplishing same for continuously laying pipeline beneath the surface of a liquid. The system includes a plurality of submersible vehicles which are moveably attached to the pipeline. The submersible vehicles may apply translative and rotative forces to the pipeline in order to achieve a predetermined contour of the pipeline beneath the surface of the liquid. A plurality of vehicle guidance mechanisms moveably fastened to all submersible vehicles in order to determine the spatial orientation of the pipeline and a remotely located controlling mechanism drives the submersible vehicles in a manner such that the pipeline is moved to the predetermined contour. The submersible vehicles may be translated along the pipeline to afford continuous laying of the pipeline beneath the liquid surface at any depth and under adverse weather and current conditions.



3,765,186

METHOD AND APPARATUS FOR PRODUCING SUPER-LOW TEMPERATURES

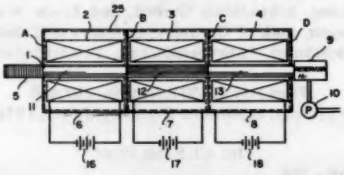
Petko Gueorguiev Vassilev, Sofia, Bulgaria, assignor to Fizitcheski Institut S Aneb Pri Ban, Sofia, Bulgaria

Continuation-in-part of Ser. No. 122,106, March 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 834,617, June 17, 1969, abandoned. This application June 14, 1972, Ser. No. 262,670

Claims priority, application Bulgaria, June 19, 1968, 10164

Int. Cl. F25b *21/02*

U.S. Cl. 62—3 **5 Claims**



A method and apparatus for producing stable super-low temperatures in a test object for laboratory purposes is described. Three different elongated superconductive elements are bonded end-to-end to form a composite rod. One end of the resulting superconductive rod is placed in good thermal contact with a reservoir containing liquid helium, while the other end of the rod is placed in good thermal contact with the object to be cooled. Each element of the rod is separately subjected under adiabatic conditions to a discrete magnetic field within a separate compartment of a surrounding superconductive shield to trigger a change of the associated element from its superconductive to its normal state with a corresponding drop in temperature. Because of the diamagnetism of the shield, the applied magnetic fields are mutually isolated, and the changes in state of each element are independent of those of the other elements. Such changes in state are discretely triggered in an appropriate sequence to

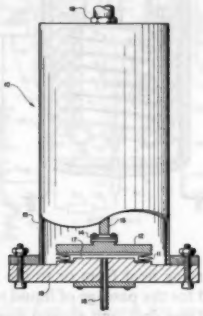
transfer accumulated heat from the test object to the reservoir.

3,765,187

PNEUMATIC STIRLING CYCLE COOLER WITH NON-CONTAMINATING COMPRESSOR

Stuart B. Horn, Fairfax, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 9, 1972, Ser. No. 279,145
Int. Cl. F25b 9/00
U.S. Cl. 62—6 6 Claims



A solenoid drive linear motor actuates bellows which creates pressure pulses traveling in a connecting tube to a cylinder in which a free displacer is located. A pneumatic volume at one end of the cylinder is raised to an average cycle pressure. The pressure pulses propagate through the body of the free displacer to the cold volume end which is to be placed in contact with an element to be cooled and cause the free displacer to be reciprocated in the cylinder resulting in net cooling at the cold volume end. Because the working volume is sealed and the volume changes occur by forces applied to the bellows by the linear drive motor, no contaminants can enter thereby making the instant device a non-contaminating system.

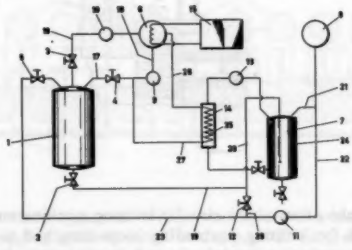
The invention described herein may be manufactured, used, and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,765,188

METHOD FOR FREEZING PRODUCTS BY DIRECT-CONTACT WITH AN EVAPORATING FREEZING AGENT

Johannes Gerardus Romijn, S-Hertogenbosch, Netherlands, assignor to Grasso's Koninklijke Machinenfabrieken N.V.

Filed Jan. 31, 1972, Ser. No. 222,082
Claims priority, application Netherlands, Feb. 2, 1971, 7101362
Int. Cl. F25d 17/02
U.S. Cl. 62—64 11 Claims



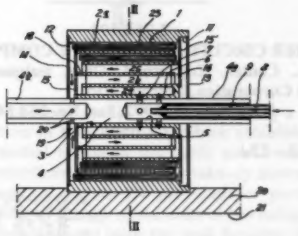
A novel method and apparatus for quickly freezing food products by a direct contact with an evaporating liquid freezing agent with a minimum of loss of the freezing agent comprising feeding the food into a freezing vessel; substantially removing all the air in this freezing vessel by purging with vapors of the freezing agent; freezing of the food by means of direct contact with the liquid freezing agent; purging the vessel of freezing agent vapor by means of air and removing the frozen food product.

3,765,189

METHOD AND APPARATUS FOR DEEP-FREEZING

Raymond Le Diouron, Grenoble, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Feb. 17, 1972, Ser. No. 227,637
Int. Cl. F25c 5/12
U.S. Cl. 62—71 7 Claims



An improved method and apparatus for the transformation of a liquid product into flakes by freezing, said method utilizing a cylinder rotating about its own axis and having its outer face passing in succession in front of a station at which a thin layer of said liquid is deposited on said outer face, and a station adapted to scrape-off said thin layer in the frozen state, the cooling being effected inside said cylinder by a refrigerant fluid injected into the interior of said cylinder and adapted to circulate in heat-exchange relation with said cylinder, in which method substantially all the internal volume of said cylinder is caused to participate in the heat-exchange process by injecting a cryogenic liquid as the refrigerant fluid in circulation in a plurality of conduits in heat-exchange with a thermal filling medium occupying substantially all the interstitial space between said conduits and the outer face of said freezing cylinder, the vaporization of said cryogenic liquid and the heating of the vapours being effected in said conduits. The cryogenic liquid may be for example liquid nitrogen.

3,765,190

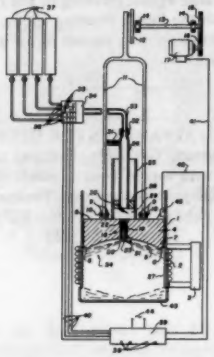
APPARATUS FOR MAKING A FROZEN CONFECTION

Ronald L. Abbott, 2325 Panorama Dr., Deep Cove, North Vancouver, British Columbia, Canada

Filed Apr. 6, 1972, Ser. No. 241,669
Int. Cl. F25c 1/14, 7/10
U.S. Cl. 62—233 10 Claims

An apparatus for making a frozen confection and having a refrigerated cylinder with a piston which reciprocates therein. The piston carries a sprayer which sprays a flavoured liquid medium on the inner surface of the cylinder during movement in one direction and scrapes the resultant frozen confection

from the cylinder during movement in the other direction. The sprayer is fed through a passage in the piston from an arrangement which responds to movement of the piston to discharge the flavoured liquid medium through the sprayer.



3,765,191

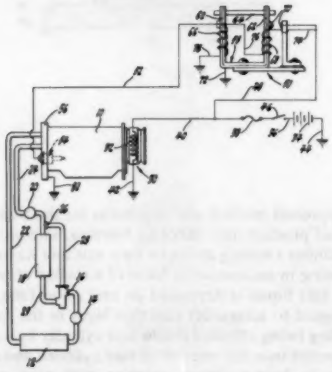
TIMER CIRCUIT-AUTOMOTIVE COMPRESSOR

James A. Canter, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed June 21, 1972, Ser. No. 264,808

Int. Cl. B60h *3/04*

U.S. Cl. 62—228 **5 Claims**



A compressor protector system in an air conditioning system which includes a compressor driven by an automobile engine through an electromagnetic clutch. When the refrigerant charge level falls below a level necessary for proper compressor cooling and lubrication, a temperature and pressure responsive switch in the compressor causes a relay to close. After a slight delay, a fuse in the electromagnetic clutch circuit is blown. This deactivates the compressor until additional refrigerant can be added to the system.

3,765,192

EVAPORATOR AND/OR CONDENSER FOR REFRIGERATION OR HEAT PUMP SYSTEMS

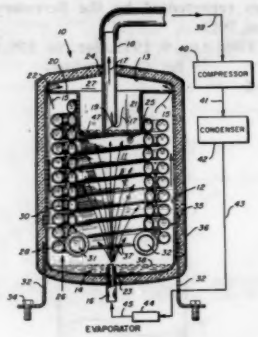
Donald S. Root, P.O. Box 2125, Tulsa, Okla.

Filed Aug. 17, 1972, Ser. No. 281,297

Int. Cl. F25b *13/00*

U.S. Cl. 62—324 **7 Claims**

This invention describes a unitary structure which can be used interchangeably as an evaporator or as a condenser in a refrigerating system, or in a heat pump system. It comprises generally a pressure vessel, a diffusion means across the internal cross-section area between the ends of the vessel for the purpose of blocking direct flow of liquid refrigerant through the vessel and for distributing the flow of gaseous refrigerant around the periphery of the vessel. There is at least one helical coil of pipe inside the chamber adjacent the wall thereof, for the purpose of carrying heat from or to the vessel. First pipe means are provided for the passage of liquid refrigerant into or out of the vessel at one end, and second pipe means are provided at the other end for the passage of gaseous refrigerant into or out of the vessel.



3,765,193

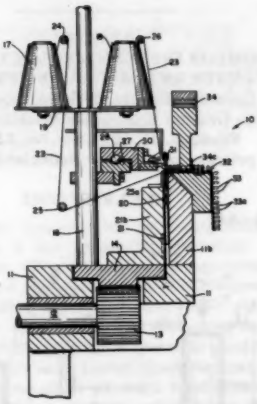
METHOD AND APPARATUS FOR THE CIRCULAR KNITTING OF HOOK AND LOOP FASTENER ELEMENTS

Jean-Jacques Conroux; Christian Pierre Jonville; Erwin Alair Zurcher, all of Geneve; Daniel Henri Philippe Pilet, Founex, all of Switzerland, and Claude Henri Guignard, Ferney-Voltaire, France, assignors to Societe Pour La Recherche et Le Developpement Technologiques ("Soret")

Filed June 12, 1970, Ser. No. 45,664

Int. Cl. D04b *1/04, 9/12, 35/34*

U.S. Cl. 66—9 R **8 Claims**



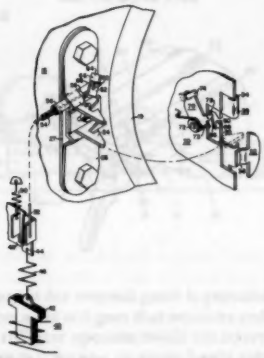
In combination with a circular knitting machine means are disclosed for knitting upstanding loops attached to a base fabric to produce a looped pile and means incorporating the use of an ultrasonic transducer for converting loops into hooks and for thermosetting the loops.

3,765,194

DOOR LOCK FOR LAUNDRY APPARATUS

Robert L. Moore, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 24, 1972, Ser. No. 237,621
Int. Cl. D06f *33/02, 39/14*
U.S. Cl. 68—139 6 Claims



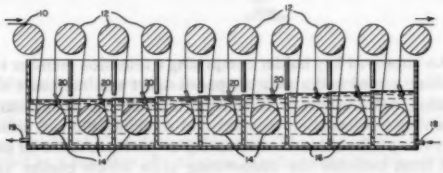
A locking mechanism is shown for use on an automatic washing machine having an outer tub which, in conjunction with the support housing, comprises an outer casing of the apparatus. The tub also defines the access opening to an inner rotatable tub and hingedly supports a door for closing the opening. A movable latch on the door cooperates with a stationary catch on the outer tub for maintaining the door closed. The locking mechanism includes a lever arm pivotally mounted adjacent the catch and movable in response to the movement of an armature of a solenoid, remotely mounted within the support housing, via an enclosed flexible wire leading from the armature to the arm. A latch lock is pivotally mounted on the door adjacent the movable latch and is movable into a position preventing the release motion of the latch. The lever arm on the tub and the latch lock on the door have complementary surfaces which engage, when the door is closed and the solenoid is energized, to transfer the motion of the lever arm to the latch lock and place the lock in an obstructing position with the latch. The solenoid armature and lock each have springs restoring them to a release position.

3,765,195

FLUID STRIPPING DEVICES

Roger Allan Wilson, Waynesboro, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 22, 1972, Ser. No. 228,167
Int. Cl. B05c *3/132*
U.S. Cl. 68—175 3 Claims



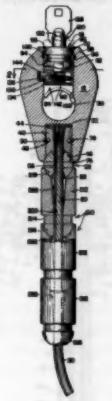
A wash-draw apparatus is improved by use of a multichanneled stripping guide located in the path of yarn emerging from the liquid bath in the apparatus. The guide extends below the bath surface and includes additional yarn contacting surfaces above the surface of the bath.

3,765,196

ARMORED CABLE-TYPE LOCK ASSEMBLY WITH SPECIAL END FITTINGS FOR THE ARMORED CABLE THEREOF

Stanley C. Balicki, 2834 N. Commerce St., Franklin Park, Ill.

Filed June 28, 1972, Ser. No. 266,984
Int. Cl. E05b *67/06, 73/00*
U.S. Cl. 70—49 13 Claims



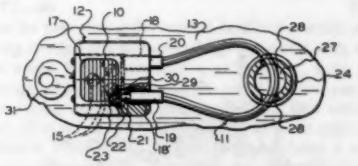
An armored ball and socket-type cable having a first end fitting in the form of a lock housing which establishes a slip joint for the medial region of the cable and a second end fitting which establishes a lost motion take-up device for the cable. Novel anchor means are provided for permanently securing the two end fittings to the ends of the cable, a novel cylinder lock is associated with the lock housing (first end fitting) for removably projecting a locking bolt into locking engagement with selected armor sections, and two forms of armor sections are capable of being used in connection with the stranded cable proper.

3,765,197

SAFETY LOCK ASSEMBLAGE FOR MOVABLE ITEMS

Daniel J. Foote, Wauwatosa, Wis., assignor to Master Lock Company, Milwaukee, Wis.

Filed Oct. 22, 1971, Ser. No. 191,716
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 5 Claims



To prevent the theft or unauthorized removal or displacement of a movable property item there is provided an elongated flexible connection whose intermediate portion is looped about or secured to or through a portion of the item to be protected. A convenient support in the vicinity of the movable item has secured thereto a box and within the box is the body of a lock which covers and renders inaccessible the box securing means. The opposite ends of the elongated flexible connection are adjustably carried by the lock in a manner so that one or both of said ends may be released upon unlocking the lock. When the latter is locked it cannot be removed from the anchored box nor can the flexible connection be released from the lock or the property item to which it extends.

3,765,198

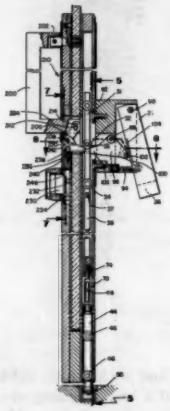
PANIC DEVICE FOR A DOOR

William J. Horgan, Jr., Pittsburgh, Pa., assignor to Blumcraft of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 97,102, Dec. 11, 1970, Pat. No. 3,696,648, which is a continuation-in-part of Ser. No. 86,863, Nov. 4, 1970, Pat. No. 3,670,537. This application Dec. 22, 1971, Ser. No. 211,002

Int. Cl. E05b *65/10*

U.S. Cl. 70—92 3 Claims



A pivotally mounted bar is mounted on the inside of a locked door. Upon pivotal movement of the bar toward the door a cam member is pivoted to raise a lock bolt to unlock the door without the use of a key. The door can be unlocked from the other side by means of pulling on a handle and thereby pivoting a cam member to raise the lock bolt. A lock means is provided to render inoperable the handle portion of the device.

3,765,199

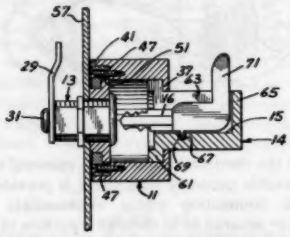
LOCK ANTI-PICK DEVICE

Max Wiczer, 9122 Kedvale, Skokie, Ill.

Filed Oct. 2, 1972, Ser. No. 294,385

Int. Cl. E05b *17/14*

U.S. Cl. 70—423 13 Claims



An anti-pick device for a lock is described in which a housing is mounted over the key slot entrance in the lock and a key holder is mounted slidably in the housing for movement along a path aligned with the key slot. A recess is provided in the key holder extending transversely of the path of movement of the key holder for receiving a key and supporting the key in alignment with the key slot.

3,765,200

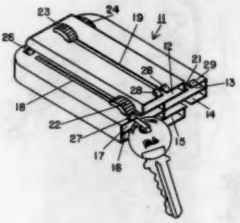
COMPARTMENTED KEY HOLDER

Kuno J. Vogt, 5854 Kantor Ct., San Diego, Calif.

Filed Feb. 26, 1971, Ser. No. 119,187

Int. Cl. A47g *29/10*

U.S. Cl. 70—456 R 2 Claims



A compartmented key holder in which a holder, preferably constructed of plastic, has a plurality of compartments, each having an exposed surface with a slot therein communicating with a compartment; a slide member is provided for each of the compartments dimensioned for being received by the compartments and having an extension riding above the slot in each compartment together with a tab for carrying an individual key; by sliding the extension back and forth over the slot, the key is then recessed within an individual compartment and exposed as desired.

3,765,201

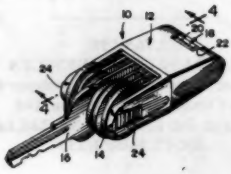
KEY HOLDER

David H. Humphrey, 2 Madrid Miramar, Santurce, P.R.

Continuation-in-part of Ser. No. 155,142, June 21, 1971, abandoned. This application Oct. 16, 1972, Ser. No. 297,786

Int. Cl. A47g *29/10*

U.S. Cl. 70—456 R 11 Claims



An improved key holder comprising a retention member including a base and a pair of spaced-apart arm members extending from the base in parallel relationship and an enclosure receiving the retention member and retaining the arm members in a predetermined relationship to preclude removal of a key from between the cooperating arms which engage and detachably hold a key. The retention member is removable from the enclosure to permit the arm members to be moved apart against the inherent resiliency thereof to permit removal of a selected key. In a modification cam means are provided between the enclosure and retention member to help urge the free ends of the cooperating arms toward one another when the retention member is seated in the enclosure.

3,765,202

DIE ROLL APPARATUS FOR INTERNAL GEARS

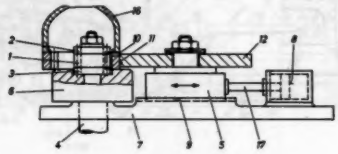
Otto Bauknecht, and Adolf Horl, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed Sept. 13, 1971, Ser. No. 180,004

Claims priority, application Germany, Sept. 24, 1970, P 20 47 037.5

Int. Cl. B21h *5/02*

U.S. Cl. 72—94 8 Claims



A floating mount for internal gears is provided which holds the gears against a die roll gear that smooths and chamfers the teeth. The die roll gear operates inside the internal gear which is pressed against it by one or more freely rotative pressure wheels engaging its exterior periphery and force feeding it against the die roll gear as the die roll gear is rotated by power means. An adjustable holding member is disposed against one radial face of the internal gear to limit axial movement and support it against axial stress while the other radial face is slidably supported on a surface encompassing the die roll gear.

3,765,203

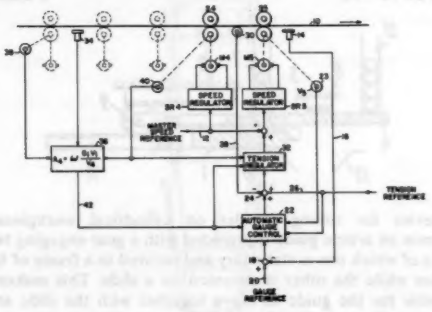
AUTOMATIC GAUGE CONTROL BY TENSION FOR TANDEM ROLLING MILLS

Robert S. Peterson, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 29, 1972, Ser. No. 230,299

Int. Cl. B21b *37/02*

U.S. Cl. 72—9 8 Claims



Method and apparatus for varying the gain of an automatic gauge control loop for rolling mills wherein gauge is controlled by varying tension in the rolled strip between the last two stands of a tandem rolling mill. The gain of the loop is varied as a function of transport time between the bite of the rolls in the last stand and a thickness gauge positioned beyond the last stand. At low mill speeds (i.e., long transport times), the gain of the loop is maintained low and varied as a function of the cross-sectional area of the strip between the last two stands. At high mill speeds (i.e., short transport times), the gain of the loop is increased and varied as a function of both cross-sectional area and the speed of the last stand.

3,765,204

PRESSURE HEAD INDICATOR FOR MACHINE TOOLS

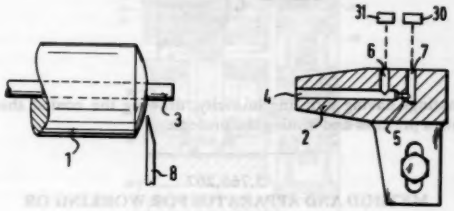
Josef Wollner, Penzendorf, Germany, assignor to Richard Bergner, Nurnberg, Germany

Filed May 5, 1971, Ser. No. 140,430

Claims priority, application Germany, May 8, 1970, P 20 22 539.2

Int. Cl. B21c *51/00*

U.S. Cl. 72—31 7 Claims



A machine tool including a pressure head indicator, forming part of the machine or part of the tool thereof. The indicator includes a body having two parallel blind bores, one connected to a source of compressed air and the other to a pressure detector, the two bores being connected by a third transverse bore having a constriction therein. Changes in pressure are detected depending whether the third bore is closed by a workpiece or by contact with another tool part. Alternatively, the third bore may be opened by breakage of the tool.

3,765,205

METHOD FOR PROTECTING HOT METAL SURFACE

Georges W. Schaumburg, 1 bis Rue de Londres, Montigny-Les-Metz, France

Continuation-in-part of Ser. No. 640,816, May 24, 1967, abandoned.

Filed Jan. 30, 1970, Ser. No. 8,099

Claims priority, application France, May 24, 1966, 6647309

Int. Cl. B21b *45/02*

U.S. Cl. 72—46 5 Claims

Process for preventing the oxidation of hot metallic surfaces comprising coating the surfaces of the hot metal with a reducing agent which forms a protective pellicle, i.e., a thin skin or film, through which the state of the metal surface can still be observed during fabrication. The pellicle or film inhibits the formation of an oxide crust. The metal may be in solid or molten condition. The pellicle is formed by applying a reducing agent to the metal surface. The reducing agent may be applied as a cloud of fine particles, as a solution, or as vapors.

3,765,206

METHOD OF FORMING COATED SEAMLESS CONTAINERS

Dipak C. Shah; George W. Ward, and Roger L. Whiteley, all of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

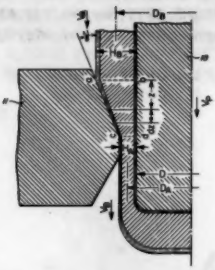
Division of Ser. No. 855,475, Sept. 5, 1969, Pat. No. 3,655,349. This application Nov. 26, 1971, Ser. No. 202,685

Int. Cl. B21d *22/20*

U.S. Cl. 72—47 5 Claims

Sheet steel having differentially coated surfaces of corrosion-resistant metal for use in drawing and ironing seamless ar-

ticles and the method of forming said articles including coating the opposite surfaces of the sheet steel with metallic



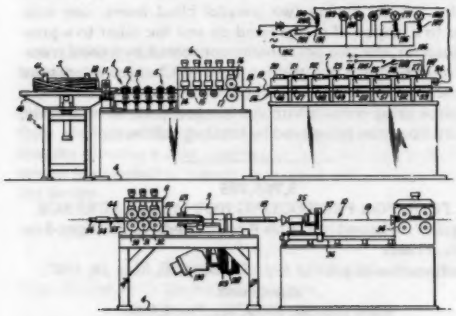
coatings having differing lubricity, drawing the coated sheet into a preform and ironing the preform.

3,765,207

METHOD AND APPARATUS FOR WORKING OR FINNING TUBING

Richard M. Winter, Mentor, and William F. Aylard, Northfield, both of Ohio, assignors to Non-Ferrous International Corporation, New York, N.Y.

Filed May 7, 1971, Ser. No. 141,249
Int. Cl. B21h *3/12*
U.S. Cl. 72—78 **18 Claims**



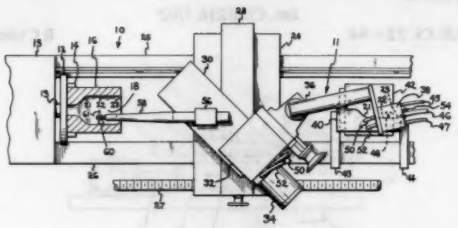
Fins or threads are formed on the exterior surface of infinite length tubing restrained against rotation and continuously fed longitudinally to a rotating fin forming head. A mandrel initially positioned within the tubing presents a backup tool in the region of the fin forming head, the mandrel being formed from alternate sections of magnetic and nonmagnetic material and being held against axial movement by magnets surrounding the tubing and presenting alternate sections of magnetic and non-magnetic material so located that magnetic flux enters and leaves the mandrel at a plurality of locations along the length of each magnet. The fin forming head is free to move axially to avoid stressing the fin forming elements which engage and form helical threads or fins on the exterior surface of the tubing. Initially, the speed of rotation of the fin forming head is adjusted so the rate of formation of fins on the tubing equals the linear speed at which the tubing is fed through the apparatus. If the speed at which the tubing is fed changes, the finning head is free to move axially and actuates a control to either increase or decrease the speed of rotation of the head so fin forming proceeds at the new rate at which the tubing is fed. Emergency shut off means are provided to shut off critical portions of the apparatus in the event of a malfunction such as axial movement of the backup mandrel or axial movement of the rotating finning head beyond certain positions.

3,765,208

MOLD KNURLING TOOL

Albert J. Cozert, Jr., Durham, N.C., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 6, 1972, Ser. No. 231,891
Int. Cl. B21d *22/00*; B21b *17/02*
U.S. Cl. 72—81 **5 Claims**



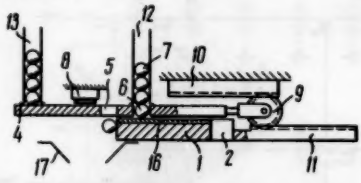
A knurling tool having a fixed knurl bar and multiple, interchangeable tool bars for use in conjunction with a lathe. Molds for forming glass containers are knurled on their interior surfaces by a knurling wheel while being rotated by a lathe. The configuration of the mold cavity requires the knurling wheel to be positioned at three separate angles during the process. The knurl bar is properly aligned with respect to the mold, and a tool bar carrying a knurlng wheel is inserted for the first knurling operation. After the first operation, the tool bar is removed and a new tool bar, having the proper angle for the next knurling operation, is inserted. This procedure is repeated for the third knurling operation using a third tool bar having yet a third angle.

3,765,209

DEVICE FOR ROLLING PROFILES ON CYLINDRICAL WORKPIECES

Efim Lvovich Petrikovsky, prospekt imeni Lenina 45, kv. 34, Chelyabinsk, U.S.S.R.

Filed Sept. 17, 1971, Ser. No. 181,381
Claims priority, application U.S.S.R., Sept. 22, 1970, 1478218
Int. Cl. B21h *3/06*
U.S. Cl. 72—90 **2 Claims**



Device for rolling profiles on cylindrical workpieces, wherein an article guide is provided with a gear engaging two racks of which one is stationary and secured to a frame of the device while the other is mounted on a slide. This makes it possible for the guide to move together with the slide at a speed that is one half of that of the latter.

3,765,210

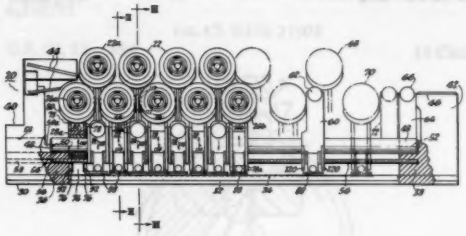
FRAMELESS ROLL LEVELER, STRAIGHTENER AND THE LIKE

Herbert Lemper, Bethel Park, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Feb. 22, 1972, Ser. No. 227,874
Int. Cl. B21d *1/02*
U.S. Cl. 72—164 **19 Claims**

A frameless roll leveler construction and like comprises a first group of leveler rolls, a second group of leveler rolls, a first group of roll supports, a second group of roll supports,

and a common support structure for said first and second roll supports. Means are provided for rotatably mounting the first group of rolls on the first group of supports respectively and for rotatably mounting the second group of rolls on the second group of roll supports respectively. Means are also included

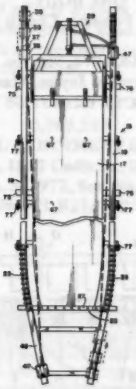


for alternately and individually mounting the first and second roll supports on the common support structure, with the second roll supports being longer than the first roll supports so that the second rolls are supported outwardly of the first rolls relative to said common support structure.

3,765,211
TANK LINER WITH CURVED FLANGES, APPARATUS AND METHOD FOR MAKING SAME

Leigh A. Struss, Nashua, N.H., assignor to Martin Welding, Inc., Lowell, Mass.

Filed Feb. 15, 1972, Ser. No. 226,640
Int. Cl. B21d *19/04*
U.S. Cl. 72—214 **10 Claims**

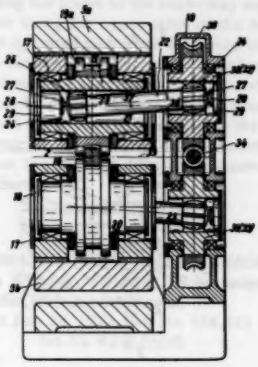


A process and apparatus for forming a flange on the side of a metal sheet and wherein the position of the flange changes with respect to the center line of the sheet. The process comprises holding the metal sheet substantially stationary on a fixed platform, while pulling a series of roller benders, together with an edge-trimming device, along on an arcuate path adjacent to the sheet being flanged. Special clamp means are used to minimize distortion in sheet position caused by stress on the sheet being processed.

3,765,212
COMPACT ROLLING MILL FOR METAL STRANDS

Jorn Moslener, Duisburg, Germany, assignor to DEMAG Aktiengesellschaft, Duisburg, Germany

Filed Aug. 14, 1972, Ser. No. 280,249
Claims priority, application Germany, Oct. 27, 1971, P 21 53 553.5
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **11 Claims**

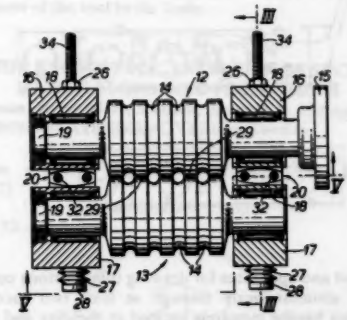


A compact, space-saving rolling mill structure for metal strands, which mill is arranged between a strand casting apparatus and a second rolling mill equipped with high or low speed rollers is disclosed herein. The compact mill comprises a roller housing journaling rollers on hollow shafts which are driven through the output of angularly adjustable power transmission shafts. The power shafts derive their input from hollow worm wheels.

3,765,213
ROLLING MILLS

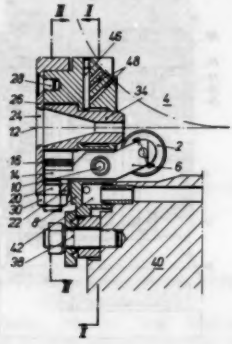
Nicholas Arthur Townsend, Bexley, England, assignor to The British Iron and Steel Research Association, London, England

Filed Nov. 22, 1971, Ser. No. 200,819
Claims priority, application Great Britain, Dec. 17, 1970, 59,985/70
Int. Cl. B21b *35/00*
U.S. Cl. 72—249 **11 Claims**



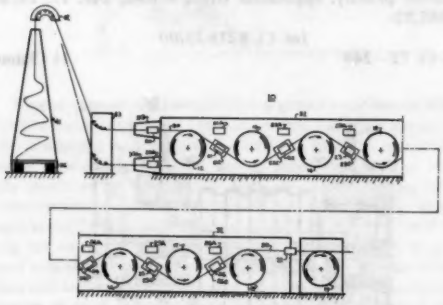
A rolling mill stand for rolling metal bars has two grooved work rolls. Only one of the work rolls is directly driven from the drive motor, the other work roll being driven by frictional engagement with the driven roll. The two work rolls are pressed together with a force greater than twice the rolling load to permit the rolling torque to be transmitted from the driven work roll to the other roll.

3,765,214
ENTRY GUIDES
Friedhelm Boehmer, Neuss, Germany, assignor to Firma Friedrich Kocks, Dusseldorf, Germany
Filed Jan. 24, 1972, Ser. No. 220,255
Claims priority, application Germany, Feb. 2, 1971, G 71 03 936.6
Int. Cl. B21b 39/20
U.S. Cl. 72—250 8 Claims



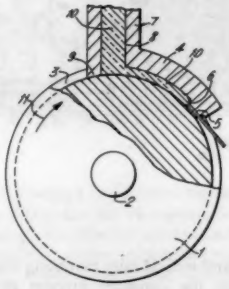
A roller type entry guide is provided for wire rod mills and comprises an intake funnel, guide rollers disposed in advance of the intake funnel about the run-through axis of the stock, each roller being journalled in the end of a lever pivoted about an axis transverse to the run-through axis and biased towards the run-through axis by a spring and an adjusting screw acting on each lever to counteract the spring force.

3,765,215
TUBE DRAWING METHOD AND APPARATUS
Guy E. Martin, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Jan. 21, 1972, Ser. No. 219,641
Int. Cl. B21c 1/10; B21d 3/00
U.S. Cl. 72—280 10 Claims



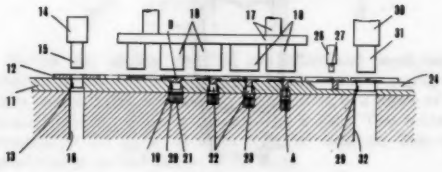
A method and apparatus for drawing tubular stock continuously and simultaneously through at least two successive drawing dies having mandrels located in the dies and within the tubular stock. The method comprises the steps of continuously pulling the tubular stock through the first one of the dies by a rotating capstan containing turns of the stock, the capstan simultaneously directing the stock to the second of one of the dies. From the second die, the stock is continuously pulled, the pulling of the stock continuously through the dies effecting a simultaneous reduction of the cross sectional area of the stock, with a single pass of the stock through the dies.

3,765,216
EXTRUSION
Derek Green, Lytham St. Annes, England, assignor to United Kingdom Atomic Energy Authority, London, England
Filed Feb. 23, 1972, Ser. No. 228,673
Claims priority, application Great Britain, Mar. 12, 1971, 6,778/71; Jan. 26, 1972, 3,668/72
Int. Cl. B21c 33/00
U.S. Cl. 72—262 15 Claims



A metal extrusion process in which the force for extrusion of the metal through a die is derived, at least in part, by maintaining frictional engagement of the metal with passageway defining surfaces of a member which is moved towards the die such that frictional drag of the passageway defining surfaces urges the metal through the die. Apparatus for performing the method is disclosed, including having the capability of continuous feed.

3,765,217
METHOD FOR MOULDING PROTRUDED SHAFTS AS ONE BODY
Hidekatsu Ikeda, 40, 1-chome Choliji Higashi, Osaka-shi, Japan
Filed Sept. 14, 1971, Ser. No. 180,266
Claims priority, application Japan, Mar. 24, 1971, 46/18170
Int. Cl. B21d 31/06
U.S. Cl. 72—334 1 Claim



A method for moulding a base plate with an integral shaft. The method is carried out by successively performing, during the period and intermittently travelling plate of material is stationary, the steps of forming holes at required distances from each other, forming enlarged projections on the under face of the plate for insertion into successive concave holes by pressing on the upper face of the plate for making the plate material thinner between the holes, and finally press-inserting the enlarged projections into successively smaller diameter concave holes to thus reduce the diameter of the projections.

3,765,218

METHOD OF MANUFACTURING A COMPONENT FOR USE IN A ROLLER CLUTCH ASSEMBLY

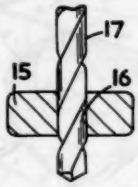
Howard Poulson, Hampton Magna, near Warwick, and Ian Anthony Dockerill, Solihull, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 1, 1972, Ser. No. 230,563

Claims priority, application Great Britain, Mar. 5, 1971, 6,218/71

Int. Cl. B21k *21/08*

U.S. Cl. 72—354 13 Claims



A component for a roller clutch assembly includes a sleeve having a head part and a shank part, and the component is produced by first cropping a steel bar to produce a slug having a length to diameter ratio of not less than 0.75. The slug is then deformed into a substantially cylindrical billet having a diameter substantially equal to the diameter of the head part of the finished component. After heat treatment of the billet to remove work hardening, an axially extending, centrally disposed bore is formed in the billet and the billet is positioned in a die. Within the die, a punch is used to perform a first impact extrusion process on the billet so that metal flows in the direction of movement of the punch and produces a preform defining the shank part of the sleeve and having a head portion which tapers inwardly to towards said shank part. The preform is then heat treated to remove work hardening and a further punch is then used to perform a second impact extrusion process on the preform. In the second extrusion process, metal flows in the opposite direction to the direction of movement of the further punch and effects shaping of the preform so that the included angle of the tapering head portion of the preform is increased to produce the head part of the sleeve and thereby, the finished component.

3,765,219

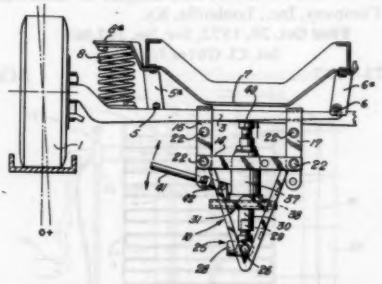
WHEEL ALIGNMENT DEVICE

William N. Easom, Jr., 1822 Cadiz St., Dallas, Tex.

Filed Jan. 3, 1972, Ser. No. 214,586

Int. Cl. B21d *9/05*

U.S. Cl. 72—389 8 Claims



A device for straightening wheel suspension beams on a vehicle consisting of a bifurcated frame between the sides of which is pivotally mounted either a fluid operated or mechanical jack having a force exerting member thereon arranged to engage a beam to be straightened. The frame may be suspended to the beam, and the force exerting member of the jack is engaged with the beam in position to exert a force thereagainst to straighten same. The jack is confined between the side members of the frame so that in the event it should become disengaged from the beam it is prevented from moving outwardly of the frame which might come into contact with and injure workmen using same. The suspending members for suspending the frame to the beam may be attached at selected locations along the upper sides of the beam so that the fluid pressure operated jack when employed therewith can either be placed between the suspension members to exert a straight force between the suspension members or the suspension members may be placed at one side of the force exerting member of the jack to allow the jack to engage the beam angularly with reference to the frame so that a bending force can be exerted against the beam to bend same outwardly of the suspension members.

3,765,220

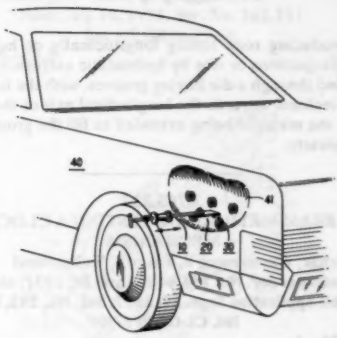
BODY SHAPING TOOL AND ACCESSORY

Robert Franklin Kirspel, Middlesex, N.J., assignor to Eric Schubert, Amelia, Ohio, a part interest

Filed July 28, 1971, Ser. No. 166,841

Int. Cl. B21j *13/08*

U.S. Cl. 72—460 1 Claim



A automobile body shaping tool is rendered more efficient by means of an accessory including: a hook for attachment to the end of the tool; and several anchors for attachment to the body to be shaped and for receiving the hook so as to result in attachment of the tool to the body.

3,765,221

DIE FOR HYDROSTATIC EXTRUSION OF SECTIONS HAVING ELONGATED PROJECTIONS

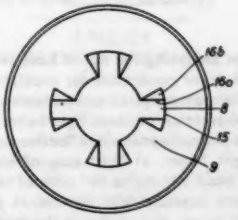
Jan Nilsson, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 1, 1972, Ser. No. 230,816

Claims priority, application Sweden, Mar. 19, 1971, 3545/1971

Int. Cl. B21c *25/02*

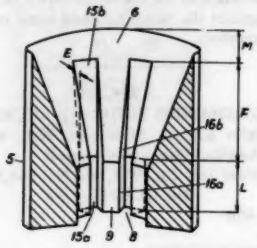
U.S. Cl. 72—467 3 Claims



In the hydrostatic extrusion of rods having ribs extending from a core part, extending longitudinally or helically, a billet

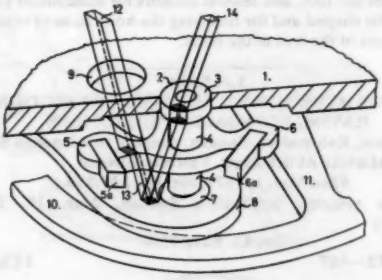
is hydrostatically extruded through a die having grooves which decrease in width from the inlet die towards the smallest cross-section of the die opening, so that the grooves are filled with the material of the billet.

3,765,222
DIE FOR HYDROSTATIC EXTRUSION OF SECTIONS HAVING ELONGATED PROJECTIONS
Bertil Lundback, Robertsfors, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Mar. 1, 1972, Ser. No. 230,896
Claims priority, application Sweden, Dec. 30, 1971, 16884/71
Int. Cl. B21c *25/02*
U.S. Cl. 72—467 **4 Claims**



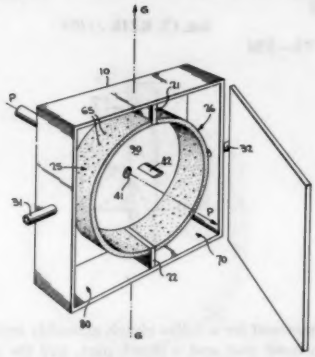
For producing rods having longitudinally or helically extending projections or ribs by hydrostatic extrusion, the billet is extruded through a die having grooves, with the bases of the grooves inclined towards the longitudinal axis of the die so as to cause the material being extruded to fill the grooves of the die completely.

3,765,223
LIGHT BEAM METHOD FOR TESTING A CLOCKWORK MECHANISM
Albert Schar, Garternweg 8, Lotzwil, Switzerland
Continuation of Ser. No. 135,648, April 20, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 292,107
Int. Cl. G04b *17/00*
U.S. Cl. 73—6 **4 Claims**



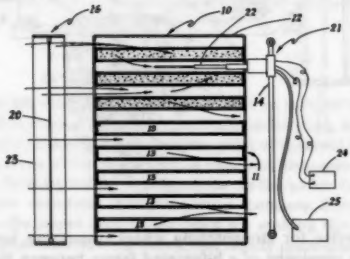
A method for analyzing the out of beat error of oscillation of a clockwork lever connected for oscillation between and parallel with a movement plate and a member having a reflective surface, wherein an incident light beam is directed from said movement plate toward said reflective surface to produce a reflected light beam, at least one of said incident and reflected light beams being in the path of oscillation of said lever to produce adjacent said movement plate a reflected modulated light beam, and analyzing the modulated reflected light beam to determine the quantity of a given function of oscillation of said lever.

3,765,224
INSTRUMENT FOR MEASUREMENT OF FLUID DENSITY OR COMPOSITE FLUID MIXING RATIO
Arthur J. Ostdiek, 1224 Dalewood Dr., Wheaton, and Francis M. Manion, 1705 Evelyn Dr., Rockville, both of Md.
Filed June 22, 1972, Ser. No. 263,137
Int. Cl. G01n *9/00, 9/30;* **G01p** *15/00*
U.S. Cl. 73—32 R **10 Claims**



A vortex concentration sensor comprising a shallow cylindrical chamber having a porous sidewall equally divided such that a plenum connected to one half supplies a fluid of one density and a plenum connected to the other half of the porous sidewall supplies a second fluid of an unknown density. The axis of the chamber transverse to the principle cylindrical axis and apportioning the sidewall between the two plena is oriented parallel to a constant acceleration field such as the earth's gravitational field. Inside the chamber, preferably in the center, is located a drain for the fluid issuing from the sidewall. An airfoil pickoff is located near the drain inside the chamber to sense the streamline angle of a vortex created by the unequal forces acting upon the molecules of the two different fluids issuing into the chamber. When the device is oriented in the manner prescribed a signal is produced at the airfoil pickoff that is a function of the density difference between the two fluids. Knowing the density of one of the fluids and the value of the earth's gravitational field the output is a direct function of the density of the unknown fluid. Alternatively if the mixing ratio of a particular fluid is to be determined, the output of the airfoil pickoff then becomes a function of the mixing ratio of the constituents of the unknown fluid.

3,765,225
CARBON FILTER LEAK DETECTOR
Richard D. Rivers, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Oct. 30, 1972, Ser. No. 302,066
Int. Cl. G01m *3/20*
U.S. Cl. 73—40.7 **2 Claims**



The invention provides a method for testing a carbon type unit filter for leaks, wherein the material used to test the filter

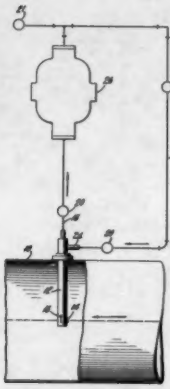
is reactive with the carbon filter media. This method of testing unit filters for leaks has the advantages of allowing precise location of any leakage paths, and avoiding loading of the filter during the testing operation.

3,765,226

SELF-POWERED SAMPLE PROBE

Barney R. Strickland, Westfield, and David W. Turner, Clark, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed June 23, 1971, Ser. No. 155,997
Int. Cl. G01n *1/10*
U.S. Cl. 73—53 **1 Claim**



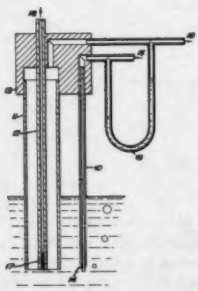
A self-powered sample probe for providing a continuous flow of fluid to an analyzer is located with the fluid stream to be analyzed. The probe has an inlet facing upstream and return openings facing approximately ninety degrees on either side of the upstream inlet. The differential pressure head between the inlet and return openings is sufficient to provide continuous flow through the sample loop and external analyzer and to return the fluid back into the main stream.

3,765,227

APPARATUS FOR THE DETERMINATION OF SURFACE TENSION OF LIQUIDS

John Campbell, 4 Hoe Meadow, Beaconsfield; Roger Francis Argyll Freeman, 30 Herons Pl., Marlow, and Gwilym Iorwerth Williams, 8 Rosken Grove, Farnham Royal, all of England

Filed Sept. 27, 1971, Ser. No. 184,128
Claims priority, application Great Britain, Oct. 1, 1970, 46,648/70; Apr. 13, 1971, 9,191/71; June 9, 1971, 19,602/71
Int. Cl. G01n *13/02*
U.S. Cl. 73—64.4 **9 Claims**



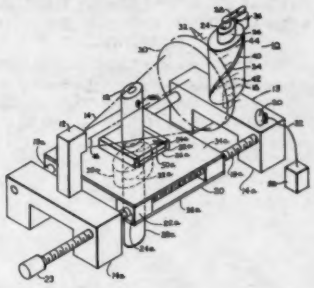
This invention is concerned with apparatus for the determination of surface tension of liquids and to a method for the continuous or intermittent analytical determination of minor solute ingredients in solution in liquids in cases where such solute ingredients affect the surface tension of the liquid under investigation. The surface tension is determined using a variant of the well-known maximum bubble pressure technique using novel apparatus designed to ensure a substantially flat interface between gas and liquid in one of two tubes used to determine the maximum pressure difference between the two tubes. The apparatus with which the invention is concerned comprises a probe consisting essentially of a first tube having an orifice to provide bubbles of gas in a s teady succession when the apparatus is in use, and a second tube having an opening at its lower end and comprising means tô maintain at its said lower end an interface between gas in the second tube and the liquid, the surface tension of which is to be determined, in a substantially horizontal plane, the first and second tubes being mounted in the probe so that the orifice of the first tube and the opening of the second tube are substantially in the same horizontal plane when the probe is in use; means for connecting a supply of gas to each of the two tubes; and means for measuring the pressure difference between the said first and second tubes when determining the surface tension of a liquid.

3,765,228

NON-DESTRUCTIVE TESTING ARRANGEMENTS - MOVABLE REFLECTORS

George H. Halsey, 63 Shady Dr., Indiana, Pa.

Filed July 14, 1971, Ser. No. 162,511
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.5 **22 Claims**



A non-destructive testing arrangement comprises a source of reflectable penetrative energy, a reflector structure, and means for rotatably mounting the reflector structure at a position such that an energy envelope of the source is substantially intercepted by the reflector structure. Reflective means are mounted on the reflector structure and disposed for reflecting successive increments of an intercepted area of the energy envelope and a relatively small receiver for the testing energy is juxtaposed to the reflector structure for receiving the reflected increments. The receiver has about the same order of active area as that of one of the reflected increments. Means are provided for positioning a specimen to be inspected between the reflctor structure and one of the energy source and the receiver so as to intercept the energy.

3,765,229

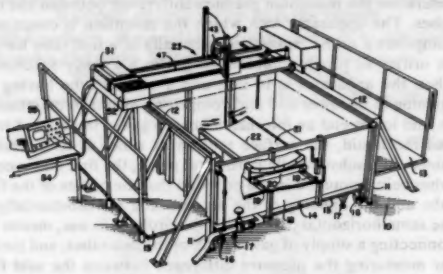
ULTRASONIC SCANNER FOR RADIAL AND FLAT PANELS

Robert L. Spencer, and Ewing K. Hill, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,263
Int. Cl. G01n *29/04*
U.S. Cl. 73—67.8 S **10 Claims**

This specification discloses an ultrasonic scanner that is adapted to scan flat or radial panels which are of a honeycomb

structure or include welded seams. The apparatus includes a bridge support in the form of a pair of spaced rails, a travelling bridge movable on the rails, a carriage that is either locked in a fixed position on the bridge or is reciprocal therealong, a tubular arm depending from the bridge and having a search unit at its lower end, mechanism on the carriage to oscillate the



arm when the carriage is in fixed position, clamping means to lock the carriage in position on the bridge, and a detachable lock for rendering the oscillating mechanism inoperable, said clamping means and lock being selectably usable, one to the exclusion of the other depending on the type of panel to be scanned.

3,765,230

METHOD OF MEASURING INTRINSIC STRESSES IN STRUCTURAL COMPONENTS OF MACHINES AND APPARATUS AND DEVICES FOR PERFORMING SUCH METHOD

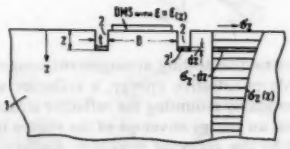
Wolfgang Bohm, Essen-Bredeney, and Helmut Wolf, Duisburg-Grossenbaum, both of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Apr. 2, 1971, Ser. No. 130,724

Claims priority, application Germany, Apr. 4, 1970, P 20 16 118.6

Int. Cl. G01b 7/16

U.S. Cl. 73—88 R **12 Claims**



Intrinsic stresses are stresses within structural bodies which occur without the action of external forces or torques. Such stresses may impair the mechanical strength, dimensional accuracy and ability to properly function, and for that reason must be known in order to satisfy exacting demands, for example, those to be met by the rotors of turbines or generators. For determining intrinsic stress, a measuring area on the surface of the body is provided with strain gages such as bonded wire strips, which furnish an electric magnitude in response to deformation. Thereafter, a ring-shaped groove or slot is cut around the measuring area. The cutting, such as by means of a milling tool, has the effect of reducing the intrinsic stresses in the retaining core within the ring. The electrically measured changes in elongation are a measure of the intrinsic stresses in the undisturbed region of the material prior to the cutting operation. By a stepwise cutting operation of the groove, nonuniform distributions of intrinsic stress can also be ascertained along the depth of the body.

3,765,231

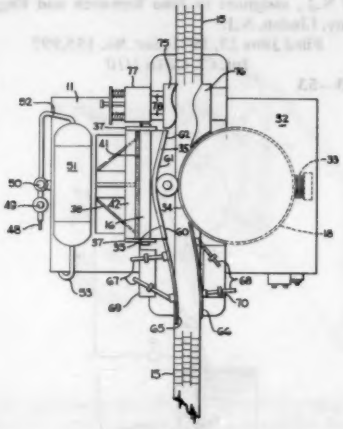
SQUEEZE TESTER FOR GLASS CONTAINERS

Roger L. Erb, Brockway, and James F. Wesdock, Reynoldsville, both of Pa., assignors to Brockway Glass Company, Inc., Brockway, Pa.

Filed Nov. 11, 1971, Ser. No. 197,785

Int. Cl. G01n 3/00

U.S. Cl. 73—94 **2 Claims**



Apparatus for squeeze testing the side walls of glass containers by passing them successively between the periphery of a wheel and an opposed shoe. The shoe is shaped to provide a converging entrance portion, a diverging exit portion, and an intermediate arcuate portion concentric with the wheel. The shoe is urged toward the wheel to apply squeezing pressure by air pressure actuated means which includes an air reservoir to cushion the squeezing force. The shoe is mounted to move slightly downwardly toward the wheel and slightly upwardly away from the wheel so that containers passing between the shoe and the wheel periphery move the shoe away from the wheel and thus lift the containers from a conveyor.

3,765,232

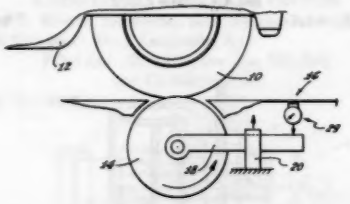
DYNAMOMETER SYSTEM

Edmond R. Pelta, Pacific Palisades, Calif., assignor to Autoscan, Inc., Los Angeles, Calif.

Filed Aug. 5, 1971, Ser. No. 169,308

Int. Cl. G01l 5/13

U.S. Cl. 73—117 **9 Claims**



A system is provided for measuring the horsepower applied to the wheels of an automobile when the automobile is disposed on the rolls of a dynamometer. The system includes a bridge circuit formed by a plurality of strain gages. The strain gages are responsive to a torque imparted to the wheels of the automobile to produce an unbalance in the bridge in accordance with such torque.

The system also includes means for producing a voltage related to the speed of rotation of the automobile wheels. This

voltage is introduced to a first pair of opposite terminals in the bridge. A voltage representing the horsepower is then obtained from a second pair of output terminals in the bridge.

One of the terminals in the second pair may be connected to a reference potential to eliminate the effects of any voltage common to the terminals in the first pair. Means may also be included in the bridge arrangement for controlling the speed of the vehicle and for compensating in the bridge for any unbalance produced by such control means.

3,765,233

DEVICE FOR MEASURING COMPRESSION OF PISTON ENGINES

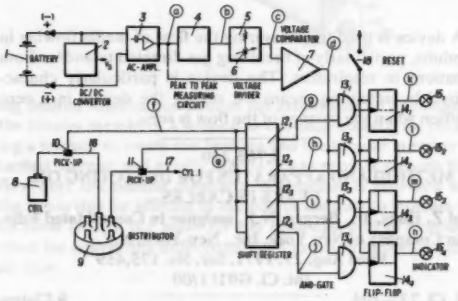
Reimar Germann, Graz, Austria, assignor to Hans List, Graz, Austria

Filed Jan. 21, 1972, Ser. No. 219,624

Claims priority, application Austria, Jan. 26, 1971, A 605/71

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.2 **5 Claims**



A device is disclosed for measuring and checking the compression of piston engines. The battery voltage or the current to the starter motor is picked up by clamps or split-wire type transducers, and the AC-component representative of the compression is transmitted to a peak-to-peak measuring device. The peak-to-peak value is storaged during the time for one or more revolutions of the engine and for each cylinder separately. The compression of each cylinder is displayed in relation to the compression of the cylinder having the highest value of compression.

3,765,234

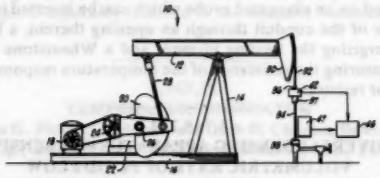
METHOD FOR DETERMINING THE NET TORQUE AND THE INSTANTANEOUS HORSEPOWER OF A PUMPING UNIT

John A. Sievert, 128 S. Osage, Ponca City, Okla.

Filed July 9, 1970, Ser. No. 53,614

Int. Cl. G01l *3/00*

U.S. Cl. 73—136 R **7 Claims**



A method for determining the imposed instantaneous net torque and instantaneous horsepower of a pumping unit, wherein the true angular position of the output shaft of the pumping unit gear box is utilized in determining the particular torque factor. The method generally consists of determining the actual or measured polished rod displacement and the polished rod load of a particular pumping unit as functions of time for a complete pumping period. The measured polished rod displacement is then compared with a table of calculated polished rod displacements to determine a corresponding crank angle or a corresponding calculated polished rod displacement. The calculated torque factor for the corresponding calculated polished rod displacement or the corresponding crank angle is then utilized to determine the imposed instantaneous net torque and instantaneous horsepower of the pumping unit.

3,765,235

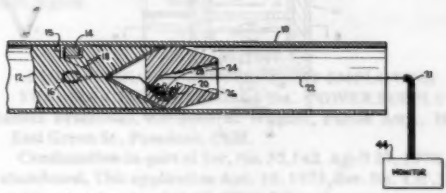
METHOD OF MEASURING SIDE SLAP OF A PROJECTILE IN GUN TUBE

Warren P. Morrow, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1972, Ser. No. 302,454

Int. Cl. G01l *5/14*

U.S. Cl. 73—167 **3 Claims**



A method of monitoring side slap of a projectile during its in-bore travel. A coil and magnet assembly is mounted on the outer periphery of the projectile under observation. The assembly is insulated from the projectile and is adapted to generate an energy pulse upon leaving the gun tube. A magnetic flux field is established for the assembly which upon being disturbed produces a voltage change that is recordable upon suitable apparatus. Data has been taken for the time prior to the exciting of the projectile from the gun tube which illustrates the voltage signal received is a function of the side slap of the projectile within the tube. A gun bore wire take-up cone may be utilized in the device of the present invention to collect the wire that connects to the read-out instruments.

3,765,236

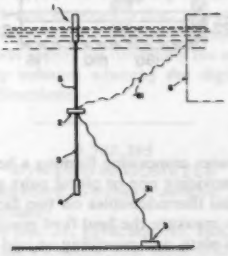
APPARATUS FOR RECORDING SWELL FREQUENCY AND PROPAGATION DIRECTION OF WAVES

Ladislas Erdely, Paris, France, assignor to Agence Nationale de Valorisation de la Recherche, Paris, France

Filed Feb. 24, 1971, Ser. No. 118,285

Int. Cl. G01d *21/02*; **G01w** *1/00*

U.S. Cl. 73—170 A **5 Claims**



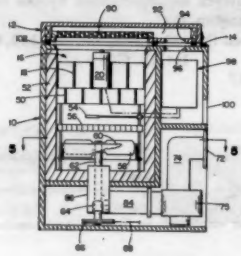
Apparatus for measuring the swell frequency and propagation direction of an ocean wave which comprises a swell col-

lector including a water gauge which is partially submerged, the collector being connected by a rigid shaft to a ballast. A flexible connection is provided to an anchoring device and the collector encloses a magnetic compass and a counter. Remote readout means are also included.

3,765,237
CALORIMETRY

David E. Blackmer, Harvard, and Eldon A. Boling, Brookline, both of Mass., assignors to Instrument Laboratory, Inc., Lexington, Mass.

Filed Apr. 6, 1971, Ser. No. 131,675
Int. Cl. G01k *17/00*; C12k *1/04*
U.S. Cl. 73—190 R **18 Claims**

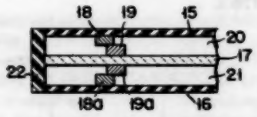


Microcalorimetry apparatus includes a chamber in which a plurality of samples to be analyzed are supported. The chamber is surrounded by thermal insulation at least a portion of which is porous. Air at an accurately controlled temperature is supplied to the chamber under positive pressure to cause continuous exhausting of air through the porous insulation. A reference sensor is disposed in the chamber and provides a reference signal to accelerate equilibration of the samples in the chamber. The apparatus is particularly useful in detecting bacterial growth by sensing the heat production in the samples under analysis and sensing for a positive derivative of the rate of heat production in the samples.

3,765,238
HEAT FLOW METER

Sadao Sumikama, Yokohama; Kazuhiro Osato, Kawasaki, and Jiro Nishimura, Yokohama, all of Japan, assignors to Showa Denko K. K., Minato-ku, Tokyo, Japan

Filed Dec. 29, 1970, Ser. No. 102,290
Int. Cl. G01k *17/00*
U.S. Cl. 73—190 H **4 Claims**

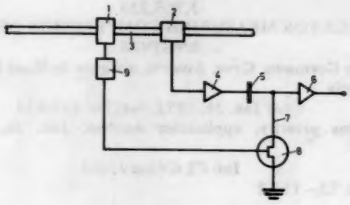


A heat flow meter comprising forming a heat flow measuring portion by providing one or plural pairs of mutually connected differential thermocouples on two faces of a thermal resistant plate to measure the heat flow passing through said thermal resistant plate, and providing on said heat flow measuring portion a covering portion composed by a thin heat resisting plate, metallic film, black or gray film and a protective film.

3,765,239
FLOW MEASURING DEVICE

Sven-Gunnar Sigvard Olsson, Sollentuna, Sweden, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Mar. 22, 1971, Ser. No. 126,549
Claims priority, application Sweden, Mar. 25, 1970, 4096/70
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R **3 Claims**

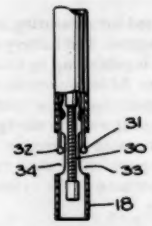


A device is used for measuring the flow of media flowing in conduits, particularly of breathing gas directed to and/or from a patient in respirators. The device is particularly characterized by actuating means for setting the device in a zero position when the passage of the flow is zero.

3,765,240
METHOD AND APPARATUS FOR DETECTING OIL LEAKS IN CABLES

Paul Z. Haus, Jr., Bergen, N.J., assignor to Consolidated Edison Company of New York, Inc., New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,459
Int. Cl. G01f *1/00*
U.S. Cl. 73—204 **9 Claims**



Method and apparatus for locating a leak in a conduit filled with oil under pressure in which the oil is locally heated and the temperature on opposite sides of the heated portion is measured to determine the temperature difference, the side having the higher temperature indicating the direction of oil flow, and hence the direction of the leak, with respect to the heated portion. The apparatus comprises an electric heating element and at least one temperature responsive resistor mounted on an elongated probe which can be inserted into the interior of the conduit through an opening therein, a battery for energizing the heating element and a Wheatstone bridge for measuring the resistance of the temperature responsive resistor or resistors.

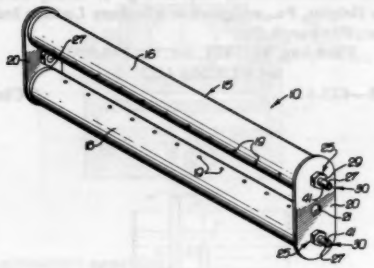
3,765,241
UNIVERSAL SENSING APPARATUS FOR SENSING VOLUMETRIC RATE OF FLUID FLOW

Robert R. Lambert, 442 W. Leadora, Glendale, Calif.

Continuation-in-part of Ser. Nos. 814,498, March 17, 1969, abandoned, and Ser. No. 706,058, Feb. 16, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,539
Int. Cl. G01n *9/00*
U.S. Cl. 73—212 **11 Claims**

The sensing apparatus has two tubular members, each with a row of axially spaced side openings, a hollow threaded bush-

ing extending from each end of each member, an end plate on either end of the tubular members, with the bushing extending through spaced holes in the end plates to rotatably mount the members thereto in spaced relationship with each other for being installed in a duct with one bushing of each tubular member extending through the wall of the duct to mount the sensing apparatus to the duct and to connect with means for measuring differential fluid pressure to sense the volumetric rate of air flow. The apparatus has mating dimples for indicating desired rotative positions of the axially spaced openings on the tubular members, a wrench slot in each bushing for receiving a wrench to rotate the bushing and the tubular member attached thereto, and axially spaced fins to provide smooth fluid flow over the tubular members. A template is provided with the apparatus for affixing to the wall of the duct to indicate the location to drill the holes for the bushings, and to provide a chart for converting differential fluid pressure into volumetric air flow.



3,765,242

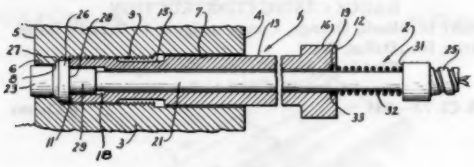
REUSABLE BOLT TYPE MOUNTED THERMOCOUPLE

John R. Bailleu, c/o Barber-Colman Co., Rockford, Ill.

Filed July 24, 1972, Ser. No. 274,255

Int. Cl. G01k 7/02

U.S. Cl. 73—359 **20 Claims**



A reusable bolt type thermocouple mounting is slotted lengthwise to permit replacement of the thermocouple in the mounting and so permit reuse of the mounting. The thermocouple is separably retained in the reusable mounting by a spring.

3,765,243

TEMPERATURE INDICATOR

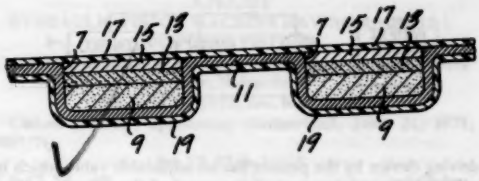
Charles G. Pickett, Andover, and Desh D. Chadha, Dover, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Division of Ser. No. 120,891, March 4, 1971. This application Aug. 2, 1972, Ser. No. 277,256

Int. Cl. G01k 11/08

U.S. Cl. 73—356 **14 Claims**

Temperature indicators are provided comprising a heat-conductive carrier having at least one, but preferably a plurality of regions (cavities) thereon, each region containing a thermally responsive substance which undergoes a change of state at a precise and predetermined temperature different from the temperature of the change of state of the thermally responsive substance in any other region. The temperatures at which such changes of state occur are detected visually by an indicator system which is intimately associated with the thermally responsive materials in these regions. The incorporation of certain organic compounds into the indicator system accelerates visual detection of such change of state, thus permitting rapid measurement of the temperature corresponding to the incipient fusion of the thermally responsive material in each region.



3,765,244

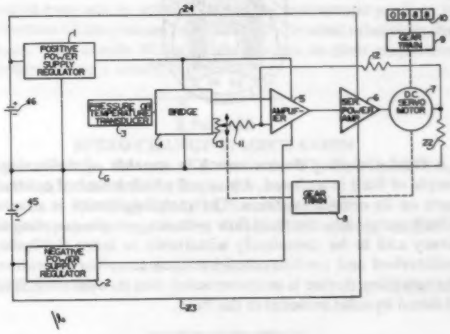
DIGITAL READOUT INSTRUMENT EMPLOYING TRANSDUCER AND DOUBLE D.C. POWER SUPPLY

Janusz Brzezinski, c/o John E. Wagner, Patent Atty., 1041 East Green St., Pasadena, Calif.

Continuation-in-part of Ser. No. 32,142, April 27, 1970, abandoned. This application Apr. 19, 1971, Ser. No. 135,338

Int. Cl. G01k 7/24

U.S. Cl. 73—362 AR **4 Claims**



A digital readout thermometer employing a resistance bridge with a temperature sensitive resistance such as a thermistor in one leg of the bridge and including a motor driven adjustable resistance or potentiometer for rebalancing the bridge. A servo amplifier and d.c. servo motor servo drive a digital counter to provide a reading indicative of the temperature. The circuit employs a d.c. power supply for the bridge circuit and a second d.c. power supply cooperating with the first power supply for furnishing the servo circuit with opposite polarity voltages whereby the digital counter will operate in both directions.

3,765,245

DYNAMO ERGOMETER

Franz Hampl, Hochberg, Germany, assignor to Erich Jaeger, Wurzburg, Germany

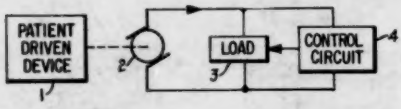
Filed Dec. 31, 1970, Ser. No. 103,268

Int. Cl. A61b 5/00; G01l 5/02

U.S. Cl. 73—379 **17 Claims**

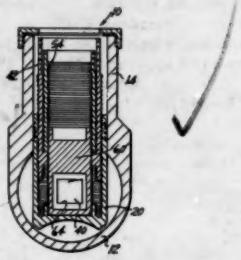
A dynamo ergometer having an electrical generator, preferably a self excited a.c. or d.c. generator, which is driven

in a conventional manner by means of a driving device e.g., a pedal arrangement, by a patient, a load for absorbing the electrical energy put out by the generator and a control circuit for regulating the electrical energy absorbed or dissipated by the load to a value such that the physical energy transmitted to the



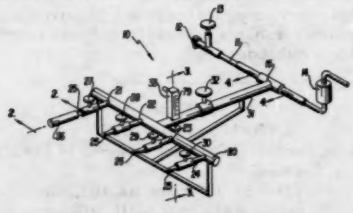
driving device by the patient has an adjustable value which is substantially independent of the speed of the generator. The control circuit derives its operating power from the output of the generator and regulates the energy absorbed by the load by varying the load, on the generator.

3,765,246
FLUID SAMPLING DEVICE
James L. McCoy, Cap Negret 19, Altea, Spain
Filed Dec. 20, 1971, Ser. No. 209,948
Int. Cl. G01n *1/10*
U.S. Cl. 73—422 TC **9 Claims**



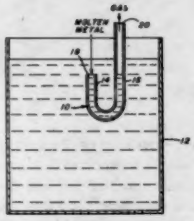
A fluid sampling device which is capable of delivering a sample of fluid in a closed, dry vessel which is free of contaminants on its outside surfaces. The sampling device is adapted to be inserted into the fluid flow system to assure sampling accuracy and to be completely withdrawn to leave the system undisturbed and unobstructed between sampling operations. The sampling device is so constructed that its operation is not inhibited by solid material in the fluid.

3,765,247
AIR SAMPLING DEVICE
R. Kent Riggs, Owensboro, Ky., assignor to National Southwire Aluminum Company, Carrollton, Ga.
Filed Oct. 22, 1971, Ser. No. 191,690
Int. Cl. G01n *1/24*, *1/26*
U.S. Cl. 73—421.5 R **7 Claims**



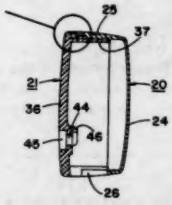
This disclosure relates to an air sampling device operated solely by compressed air which is conducted through a venturi tube thereby creating a region of reduced pressure for drawing ambient air into the device where particles or gases carried therein are trapped in a filter type device for analysis. The device includes a manifold having a plurality of fittings each adapted to receive individual sample-collecting chambers whereby several samples may be taken consecutively.

3,765,248
MOLTEN METAL SAMPLER AND METHOD OF USE
Sundaresan Ramachandran, and George J. Scoff, both of Natrona Heights, Pa., assignors to Allegheny Ludlam Industries, Inc., Pittsburgh, Pa.
Filed Aug. 30, 1971, Ser. No. 175,990
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R **7 Claims**



A method and means for obtaining a sample, such as a thin cross section sample, from a molten bath of metal, particularly a molten bath subjected to a pressure other than atmospheric pressure. The invention involves a sample mold comprising a tubular generally U-shaped or J-shaped member having generally unequal length legs characterized by a substantially unobstructed internal bore.

3,765,249
GAUGE CASING CONSTRUCTION
Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Sept. 23, 1971, Ser. No. 183,000
Int. Cl. G01d *11/24*
U.S. Cl. 73—431 **6 Claims**

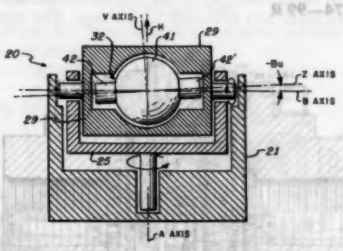


A plastic gauge casing formed of separate front and rear cup-like interfitting sections. Concentrically arranged annular skirts on a first section define an annular recess therebetween. In assembly, an annular skirt on the second section is telescopically received in the recess contiguously in an interleaved relation with skirts of the first section. Mutually engageable radial tabs on opposite facing skirts provide an interlock against pullout.

3,765,250
MULTIPLE ROTATION GYROSCOPE

Albert D. Graefe, Flushing, N.Y., assignor to Sperry Rand Corporation, Great Neck, N.Y.

Filed Aug. 25, 1964, Ser. No. 392,676
Int. Cl. G01c *19/02, 19/06*
U.S. Cl. 74—5 18 Claims



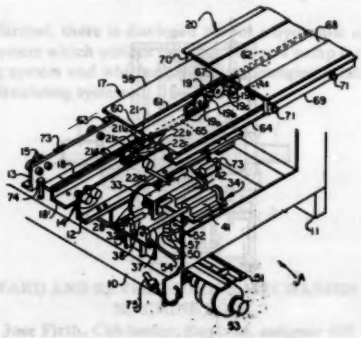
In gyroscopic apparatus,

a. an inertial element having a first axis of inertial symmetry and a second axis perpendicular to said first axis,
b. the moment of inertia of said element with respect to said second axis being greater than that with respect to said first axis,
c. said inertial element being supported for rotation about said first and second axes simultaneously,
d. means for simultaneously rotating said inertial element about said first axis at a first angular velocity component and about said second axis at a second angular velocity component appreciably greater than said first angular velocity component for providing a spatial reference.

3,765,251
SHUTTLE TRANSFER WITH SINE WAVE TIME/VELOCITY ACCELERATION

Taylor D. Whitenack, Jr., Bonita, Calif., assignor to Rohr Industries, Inc., Chula Vista, Calif.

Filed Apr. 12, 1972, Ser. No. 243,228
Int. Cl. F16h *19/04*
U.S. Cl. 74—29 10 Claims

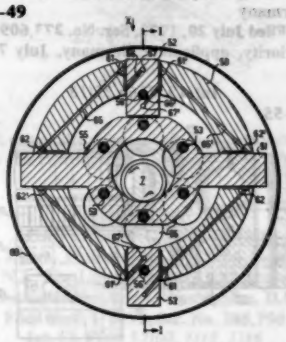


A stacker crane elevator has drive mechanism for exending a two-part load bearing shuttle from centered position on the elevator into a selected pigeonhole of an automated warehouse and vice versa. The drive mechanism accelerates and decelerates the shuttle in a sine curve time/velocity ratio by means of two crank-like drive pins mounted on a rotative head member and interposed one between each of two parallel drive faces. Orbital movement of the crank pins through circular arcs of 180° rotative movement of the head member produces acceleration of the shuttle from zero velocity through maximum and back to zero in a sine wave curve which tends to equalize acceleration throughout shuttle travel and thus to minimize displacement of a load on the shuttle.

3,765,252
HYDRAULIC PISTON MACHINE HAVING RADIALLY DISPOSED PISTONS

Anton Steiger, Illnau/Zurich, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 12, 1972, Ser. No. 263,755
Claims priority, application Switzerland, June 21, 1971, 9007/71
Int. Cl. F16h *21/18*
U.S. Cl. 74—49 6 Claims

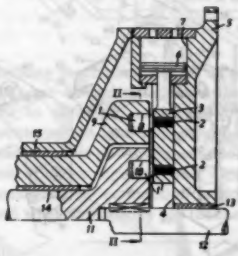


The block on which the radially disposed pistons bear is guided to rotate about the axis of the cam without rotating about its own axis in order to allow the hydrostatic pockets in the bottom of the pistons to be centrally located relative to the pistons. This avoids tilting of the pistons in their respective cylinders during a stroke.

3,765,253
SPEED CHANGING MECHANISM

Patrick George Leeson, Charnwood, 27 Swithland Ln., Rothley, Leicestershire, England

Filed July 26, 1971, Ser. No. 165,903
Claims priority, application Great Britain, Aug. 1, 1970, 37,256/70
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 10 Claims



A speed changing mechanism having a rotary or linear motion and comprising a component provided with a recessed track made up of a number of sections, each including a recess, which are all of one shape and are joined together end-to-end; a component provided with a cam track; and an array of rolling body units, each of which is linearly movable and comprises two rollers arranged respectively in constant contact with the recessed track and the cam track in operation,

the number of units being different to the number of recesses. At least one rolling body unit is connected to a piston/cylinder unit. Fluid pressure is either delivered to the unit to move the rolling body unit (s) linearly and drive the mechanism, or the piston/cylinder unit is used to transmit fluid pressure produced by linear movement of the rolling body unit when the mechanism is driven from an external power source.

3,765,254

GIANT ANTIFRICTION BEARING OPERABLE BY A PRESSURE MEDIUM

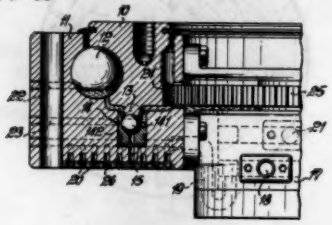
Wilhelm Schluter, Dartmund-Gartenstadt; Heinz Pohler, Herdecke-Kirchende, and Albert Hagen, Dartmund, all of Germany, assignors to Hoesch Aktiengesellschaft, Dartmund, Germany

Filed July 20, 1972, Ser. No. 273,609

Claims priority, application Germany, July 7, 1971, P 21 37 225.8

Int. Cl. F16h *25/18*

U.S. Cl. 74—55 **11 Claims**



A giant antifriction bearing in which one of the race rings is adapted to be held stationary while the other one of its race rings is rotatable, and in which pressure medium operable means are arranged within the region between the inner and outer rings and are reciprocably guided by one of the race rings and cooperate with an undulated cam surface on the other race ring.

3,765,255

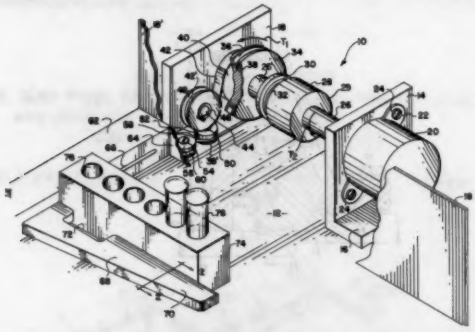
TEST TUBE TRAY FEED MECHANISM

Joe K. Bain, Decatur, Ala., assignor to Micromedic Systems, Inc., Philadelphia, Pa.

Filed Oct. 19, 1971, Ser. No. 190,486

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.22 **11 Claims**



A load advancement mechanism characterized by a slip coupling driven by a constant speed gearmotor coacting with an initial torque imposed by a constant tension spring to advance a load engaging arm at a constant speed to a stop and further adapted to be retracted manually by pulling back on the arm.

3,765,256

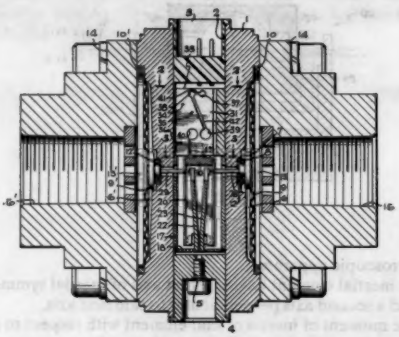
LOW RANGE HIGH OVERLOAD DIFFERENTIAL PRESSURE TRANSDUCER

Richard R. Schaberg, Ventura; Peter R. Perino, and Ronald P. Helin, both of Camarillo, all of Calif., assignors to Statham Instruments, Inc., Oxnard, Calif.

Filed Dec. 30, 1971, Ser. No. 214,029

Int. Cl. F16h *21/02*

U.S. Cl. 74—99 R **5 Claims**



A bell crank flexure useful in connection with a differential transducer whereby a differential force is translated through the bell crank flexure to a guided beam to permit the positioning of strain gauges to be oppositely stressed on the imposition of a differential force and transducers employing the same, for example, differential pressure gauges employing such flexures.

3,765,257

CONTACT PRESSURE TRANSMITTING SYSTEM OF A STEPLESS SPEED CHANGE GEAR

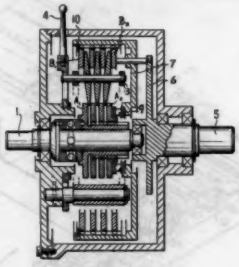
Yoshihisa Ogino, Kyoto, Japan, assignor to Shinpo Kogyo Kabushiki Kaisha (Shinpo Kogyo Co. Ltd.), Kyoto, Japan

Filed Aug. 9, 1971, Ser. No. 170,240

Claims priority, application Japan, Aug. 18, 1970, 45/72252

Int. Cl. F16h *15/08*

U.S. Cl. 74—199 **2 Claims**



A variable speed transmission in which each of a plurality of conical rollers is engaged by two pairs of elements one of which drives the associated roller and the other pair is driven by the roller. In each pair one is movable axially to compensate for the variable width of the rollers and the other is fixed against any substantial axial movement and contact pressure generating means of the cam type are employed for applying pressure against one of the fixed elements of one of the pairs of elements to assure engagement of that fixed element with its associated conical element.

3,765,258

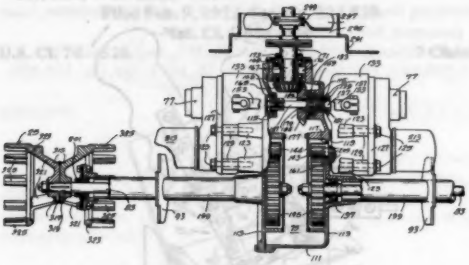
ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 857,494, Sept. 12, 1969. This application Nov. 27, 1970, Ser. No. 93,475

Int. Cl. F16h *55/30*

U.S. Cl. 74—243 R 4 Claims



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,765,259

FORWARD AND REVERSE DRIVE MECHANISM FOR A MACHINE TOOL

Arthur Jose Firth, Colchester, England, assignor 600 Machine Tools Limited, London, England

Filed Feb. 22, 1972, Ser. No. 227,865

Claims priority, application Great Britain, Feb. 25, 1971, 5,430/71

Int. Cl. F16h *3/34*; B23b *47/14*

U.S. Cl. 74—354 11 Claims

Particularly for feeding the quill of a milling machine, a forward and reverse drive mechanism having a neutral (non-drive) position, including a gear on the drive shaft selectively engageable by one of two other gears disposed one on each side of the drive shaft gear, each other gear being carried by a lay shaft one or both of which drives a driven shaft and if only one lay shaft drives the driven shaft, that lay shaft is driven by the other lay shaft through an idler gear.

3,765,260

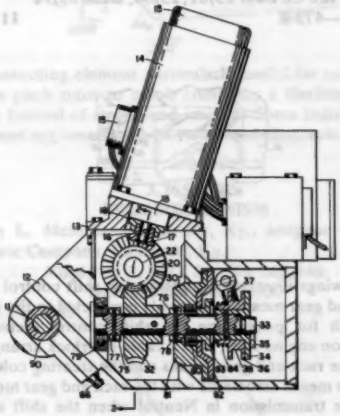
LOAD LIMITING MECHANISM

Anthony A. Lucas, Philadelphia, Pa., and Frank T. Pisano, Voorhees, N.J., The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1972, Ser. No. 285,790

Int. Cl. F16h *57/00*, *1/18*, *1/16*

U.S. Cl. 74—405 4 Claims



A load limiting mechanism for an aircraft canopy actuator in which the gear transmission has an automatic decoupling arrangement to eliminate excessive force on the actuator when a predetermined load imposing closed canopy position has been reached. The power transmission includes a one-way drive connection for opening the canopy, and a second canopy closing drive connection which is disengaged or disconnected when the canopy has reached its closed position.

3,765,261

UNITARY STICK TRANSFER CASE SHIFTER

James F. Hobbins, Philadelphia, Pa., assignor to Hurst Performance, Inc., Warminster, Pa.

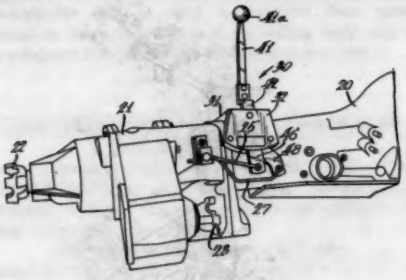
Filed Jan. 2, 1973, Ser. No. 320,059

Int. Cl. G05g *5/10*, *9/08*; B60k *17/34*

U.S. Cl. 74—477 10 Claims

An inline stick shifter for controlling the gear range and differential operation in a transfer case for a four-wheel drive vehicle. The shift lever is movable in a single plane to operate

the two controls on the transfer case through a combination of high and low gear range with the differential between the front axle and rear axle drives either locked or unlocked. A pair of



shift arms are provided for driving the transfer case controls with interlock plates immobilizing one of the shift arms while the other is being controlled by the manually operated shift control lever.

3,765,262

TRANSMISSION SHIFT CONTROL

Charles A. Mendenhall, Rochester; Richard D. Williams, Fairport; Fred G. Michaels, Pittsford, and William E. Gifford, Spencerport, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed June 29, 1972, Ser. No. 267,669
Int. Cl. B60r 25/02, 25/06; E05b 65/12
U.S. Cl. 74—473 R 11 Claims

The drawings illustrate a transmission shift control including rack and gear means operatively connected to the ignition lock switch for positioning the shift control elements in Neutral upon engine start, with a cable-interlock arrangement between the rack and gear means and the steering column, as well as cam means associated with the rack and gear means for locking the transmission in Neutral when the shift selector lever is in Neutral, while lighting means mounted on the shift selector lever illuminates the selected shift ratio indicia.

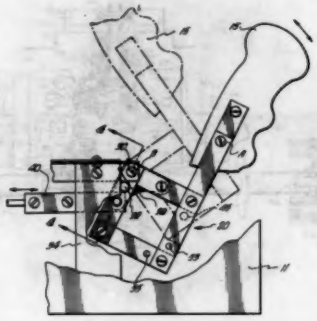
3,765,263

MECHANICAL LINKAGE SYSTEM

Richard G. Buscher, Woodland Hills; Richard L. Davis, Pacific Palisades; Edward Kazmarek, Reseda, and Richard K. Larsen, La Habra, all of Calif., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 30, 1971, Ser. No. 214,489
Int. Cl. G05g 7/00
U.S. Cl. 74—491 27 Claims

A movable hand grip system is disclosed having a plurality of interconnected members which may be adjustably interlocked in three configurations to vary the manner in which an operator can manipulate the hand grip. The system comprises a lever arm forming one leg of a four bar linkage, which is adapted to articulate in three motion modes while imparting a reciprocating motion to an output member. A hand grip is mounted on the lever arm. In a first configuration, the four bar linkage is pivotably supported to a base at the uppermost corner of the quadrilateral oppposite the lever arm. The legs of the four bar linkage are then angularly locked with respect to each other to enable the hand grip and the fixed quadrilateral to pivot about the base support axis. This angular movement of the hand grip can be accomplished by the operator by moving his arm and hand to and fro. In a second configuration, the legs of the four bar linkage are unlocked with respect to each other, while the leg of the quadrilateral opposite the lever arm is locked to the base. This arrangement



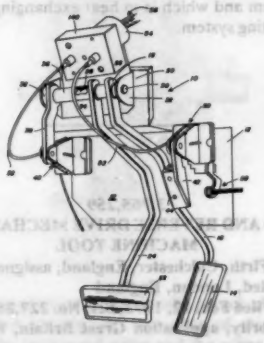
enables the hand grip to move up and down with respect to the base. This vertical movement of the hand grip can be accomplished by the operator by manipulating his hand about an imaginary axis through the wrist of the operator. In the third configuration, the linkages, including the lever arm, are locked to the base to be secured against any pivoting movement. The hand grip is then unlocked at one attaching point to enable the hand grip to pivot about the lever arm. This angular movement of the hand grip can be accomplished by the operator by manipulating his hand about an imaginary axis through the palm of the operator's hand.

3,765,264

ADJUSTABLE LINKAGE

Max R. C. Bruhn, Jr., Spring Lake, Mich., assignor to Grand Stamped Products Company, Grand Haven, Mich.

Filed Nov. 19, 1971, Ser. No. 200,357
Int. Cl. G05g 1/14
U.S. Cl. 74—512 9 Claims



The present invention discloses an adjustable linkage mechanism adapted for use with foot-operated pedals, i.e., brake, accelerator and clutch, of a motor vehicle. The spacing between the seat of a motor vehicle and the pedals may be varied to suit the requirements of an individual operator through use of an actuator mechanism operatively connected

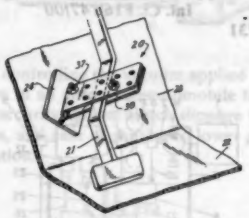
between the pedal arm and the associated linkage mechanisms. Basically, the invention provides a powered means for automatically lengthening or shortening the associated linkage to pivot the pedal either toward or away from the seat to vary the spacing therebetween.

3,765,265

CLUTCH STOP

Theodore Dzus, Jr., West Islip, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,828
Int. Cl. G05g 1/04
U.S. Cl. 74—526 7 Claims



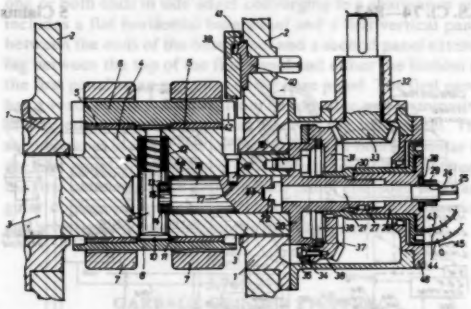
An adjustable stop for a clutch pedal of a motor vehicle. A stop plate engageable with the fixed wall of the motor vehicle is provided and a bracket mounted to the stop plate which is engageable with the clutch pedal. The stop plate and the bracket are fastened to either the clutch pedal or the fixed wall. Adjustable means are provided on the bracket and the stop plate to limit the travel distance of the clutch pedal with respect to the fixed wall of the motor vehicle thereby minimizing the danger of excessive clutch pedal movement during the shifting operation.

3,765,266

APPARATUS FOR CHANGING THE OPERATING STROKE OF A PUNCH PRESS

August Thomas Portmann, Arbon, Switzerland, assignor to Bruderer AG, Arbon, Switzerland

Filed Sept. 26, 1972, Ser. No. 292,362
Claims priority, application Switzerland, Oct. 1, 1971, 14373/71
Int. Cl. F16c 3/28
U.S. Cl. 74—571 M 5 Claims



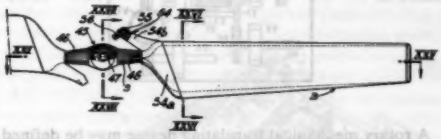
Apparatus for changing the operating or work stroke of a punch press with a double eccentric for the mounting of a drive crank, said double eccentric being arranged upon a drive shaft and consisting of an inner eccentric and an outer eccentric sleeve or bushing. A locking pin guided in a radial bore of the inner eccentric at one end cooperates by means of teeth with internal teeth of the eccentric sleeve and at the other end is spring-loaded. A central adjustment spindle cooperates with the locking pin, and due to rotation of the adjustment spindle the locking pin can be displaced against the spring-load out of engagement with the internal teeth of the eccentric sleeve. There is also provided an axially displaceable sleeve or bushing which surrounds the adjustment spindle and cooperates with a slotted plate spring which in its stressed condition connects the inner eccentric by fixedly clamping same with a drive element. The inner eccentric, when the locking pin is inactivated, is rotatable with regard to the fixedly retained eccentric sleeve and therefore the eccentricity of the double eccentric and the drive stroke of the punch press is adjustable.

3,765,267

CONNECTING ELEMENT BETWEEN TWO MEMBERS ENABLING THEM TO ROTATE IN RELATION TO ONE ANOTHER IN THREE AXES

Gaston Bourquardez, and Rene Louis Coffy, both of Bouches du Rhone, France, assignor to Societe Nationale Industrielle, Aerospatiale, Paris, France

Division of Ser. No. 37,826, May 15, 1970. This application Jan. 26, 1972, Ser. No. 221,032
Claims priority, application France, May 20, 1969, 6916289
Int. Cl. F16c 7/04
U.S. Cl. 74—581 7 Claims



A connecting element particularly useful for connecting a variable pitch rotor to a hub comprises a flexible elongated portion formed of strong and resilient fibres individually enclosed and agglomerated by a vulcanised elastomer.

3,765,268

BELT MECHANISM

Stephen L. McMillan, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed July 3, 1972, Ser. No. 268,846
Int. Cl. F16h 1/28, 35/00
U.S. Cl. 74—640 7 Claims

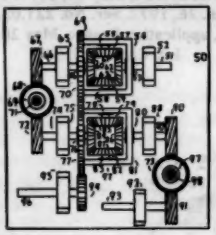
A motion reduction mechanism for use with a belt drive system. A drive belt is placed between a stationary member having an internal semicylindrical drive surface concentric with a drive shaft, and a rotating member secured to the drive shaft. The rotating member includes two or more rollers, the axes of which are parallel to and revolve about the shaft as the shaft rotates. As the axis of a roller is rotated within the arc defined by the drive surface, it holds a portion of the belt in engagement with the semicylindrical drive surface. Rotation of the rotating member causes the portion of the belt held in engagement with the semicylindrical drive surface to advance around the rotating member in a direction opposite to the

direction of rotation of the drive member. Just as one of the rollers advances to release the belt from one end of the drive surface, the following adjacent roller engages the belt with the other end of the drive surface. The belt is advanced by the difference between a first belt pitch line length about the rotating member defined when the rotating member is in the position where one roller is engaging, and the adjacent roller disengaging the belt from the drive surface, and a second belt pitch line length measured about the drive surface between the points of engagement and disengagement of the belt.

3,765,269
ROTARY MECHANICAL TRANSLATING DEVICE EMPLOYING ROTARY RELEASERS

Thomas A. W. K. Watson, 2720 Gover Apt. 24, Montreal, Quebec, Canada

Filed June 30, 1971, Ser. No. 158,250
Int. Cl. F16h *37/06*
U.S. Cl. 74—682 4 Claims

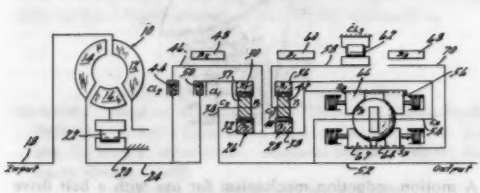


A rotary mechanical translating device may be defined as a purely mechanical device which transfers power from a prime mover to a load as a magnified function of a displacement at its input. The device exhibits a power gain and may be employed to produce mechanical amplification. A change in angular velocity of its input will result in a change in the angular velocity of its output.

3,765,270
MULTIPLE RATIO POWER TRANSMISSION MECHANISM WITH AN INFINITELY VARIABLE OVERDRIVE RANGE

George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 26, 1971, Ser. No. 137,374
Int. Cl. F16h *37/06*, *57/10*
U.S. Cl. 74—690 4 Claims

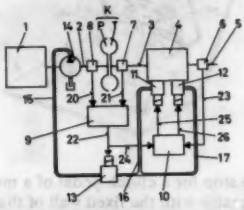


A multiple ratio power transmission mechanism for use in an automotive vehicle driveline comprising planetary gear units and clutch and brake structure for controlling the relative motion of the elements of the gear units to establish multiple torque ratios including a direct drive ratio and an underdrive ratio, and an infinitely variable overdrive unit having an input portion connected to one element of said gearing, an output portion connected to the power output shaft for the transmission mechanism and a reaction portion adapted to be selectively braked whereby the output shaft may be overdriven with respect to the input shaft throughout a predetermined range of ratios, the lower ratio of the range being close to unity whereby the driveline may be adapted to accommodate varying road loads without frequency upshifting and downshifting between the overdrive range and the direct-drive range.

3,765,271
GEAR SHIFT CONTROL SYSTEM

Hansjorg Dach, Friedrichshafen, and Gunter Gackstetter, Langenargen, both of Germany

Continuation-in-part of Ser. No. 60,387, Aug. 3, 1970, Pat. No. 3,710,647. This application Feb. 28, 1972, Ser. No. 229,858
Int. Cl. F16h *47/00*
U.S. Cl. 74—731 10 Claims

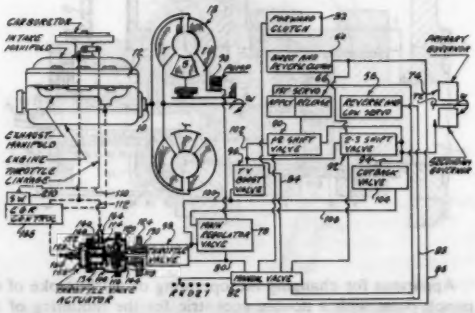


An electro-mechanical system is utilized to control changes in the drive ratio of a vehicle engine driven transmission in response to changes in torque input and output of a fluid transmitter and vehicle speed. Speed sensors develop electric signals representing input data fed to a computer programmed in accordance with the characteristics of the fluid transmitter and vehicle speed to actuate the gear ratio changing mechanisms.

3,765,272
DUAL DIAPHRAGM ACTUATOR FOR A TRANSMISSION THROTTLE VALVE ASSEMBLY

Jack A. Kolehmainen, Detroit, and George E. Lemieux, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 212,315, Dec. 27, 1971, abandoned. This application Apr. 4, 1972, Ser. No. 240,916
Int. Cl. B60k *21/00*
U.S. Cl. 74—863 5 Claims



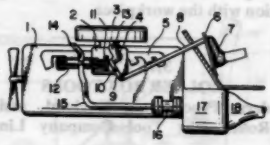
An automatic transmission throttle valve assembly that responds to engine intake manifold pressure due to the operation of engine exhaust gas recirculation controls for reducing undesired exhaust gas emissions.

3,765,273

VACUUM MODULATOR CONTROL FOR AUTOMATIC AUTOMOBILE TRANSMISSION

Ronald Re, Chester, Pa., assignor to Re-Kase, Incorporated, Chester, Pa.

Filed Nov. 28, 1972, Ser. No. 310,013
Int. Cl. B60k *21/00*
U.S. Cl. 74—865 3 Claims



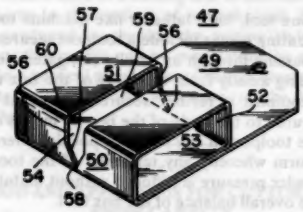
A system for controlling the vacuum applied to the vacuum modulator valve in an automatic automobile transmission so that maximum security against clutch slippage will occur during acceleration, and ease of shifting to lower gear can occur during deceleration.

3,765,274

DRESSMAKER CHALK SHARPENER

Immacolata Pisciotta, 2387 Morris Ave., Bronx, N.Y.

Filed July 7, 1971, Ser. No. 160,325
Int. Cl. B21k *5/12*; B26b *23/00*
U.S. Cl. 76—82 R 1 Claim



A device for sharpening a tailor's chalk is formed from a unitary sheet having a longitudinal medial slot terminating at one or both ends in side edges converging to a sharp apex and includes a flat horizontal base panel and a first vertical panel between the ends of the base panel and a second panel extending between the top of the first panel and either the bottom of the first panel or an end edge of the base panel. The first panel has a vertical slot extending from its top edge and terminating in side edges terminating in an apex at the base panel. The second panel is either flat and superimposed on and similar to the first panel or an inclined slotted panel extending between the first panel top edge and the base panel end edge or of angular configuration including a horizontal slotted top section and a vertical end section joining the base panel end edge.

3,765,275

GARBAGE GRINDER STUFFER

Charles W. Johnson, 34527 Elm Street, Detroit, Mich.

Filed Sept. 16, 1971, Ser. No. 181,044
Int. Cl. A47j *43/28*
U.S. Cl. 81—1 R 7 Claims

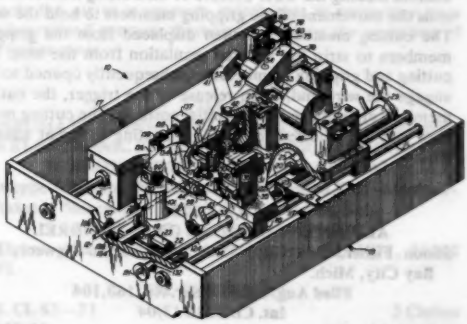
A stuffer is constructed for feeding the garbage material to a garbage grinder having a central neck section and stuffer and handhold elements on the ends thereof. Either end may be employed as a handhold element or as a stuffer element for directing the garbage into the neck of the grinder and forcing it downwardly thereinto past the resilient closure elements. The stuffer herein illustrated is made of plastic and is preferably of hollow construction made by a blow molding process.

3,765,276

WIRE STRIPPER DEVICE

Joseph F. Pollitt, Haverhill, Mass., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,668
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 15 Claims



A wire stripper device includes members for clamping an insulated wire, distinct but cooperating members for thermally severing and for stripping the insulation on the wire and members for cutting the wire. Initially, one end of an insulated wire is positioned in the wire stripper device so that the wire end abuts an adjustable stop. The clamping members are then operated automatically to clamp the insulated wire in position. At the same time, the thermal severing members are moved to a position proximate to the periphery of the insulated wire and the stripping members are moved into gripping engagement with the insulated wire. The thermal severing members then heat the insulation for a predetermined time interval sufficient to sever the insulation.

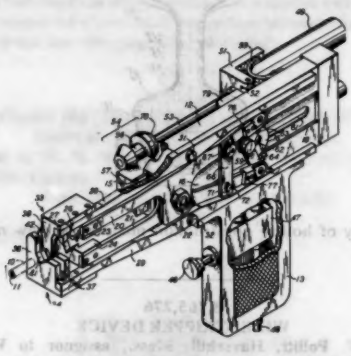
Upon the elapse of the time interval, the stripping members are automatically moved along the wire to strip the severed insulation from the wire. A preset extent of movement of the stripping members actuates the cutting members for severing the wire, thus providing a bare end section of predetermined length. Normally, the cooperation between the stripping members and the thermal severing members prevents the thermal severing members from engaging the wire. In the event the thermal severing members are permitted to engage the wire, the cooperation between the stripping members and the thermal severing members decreases the force exerted by the thermal severing members against the wire and thereby prevents damage to the wire and the thermal severing members.

3,765,277

PNEUMATIC WIRE STRIPPER HAND GUN

William W. Sorensen, North Reading, Mass., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed July 6, 1971, Ser. No. 159,880
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 A 10 Claims



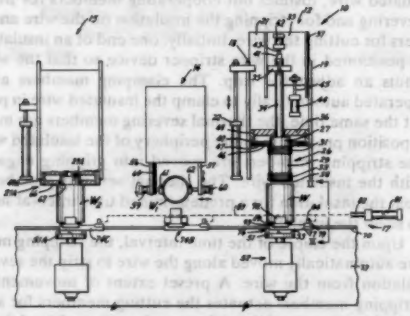
A pneumatically-operated, hand-held wire stripper device includes cooperating gripping members and cutting members. An end of the wire is inserted into the device and a trigger is actuated to close the cutting members to sever the insulation without nicking the wire. Closure of the cutting members controls the movement of the gripping members to hold the wire. The cutting members are then displaced from the gripping members to strip the severed insulation from the wire. The cutting and gripping members are subsequently opened to disengage the wire and, upon release of the trigger, the cutting members are returned to the initial position. The cutting members may be adjusted for accommodating different sizes of wire.

3,765,278

ALIGNMENT OF SHELL ONTO MANDREL

Simon Fisher, Bay City, Mich., assignor to Newcor, Inc., Bay City, Mich.

Filed Aug. 2, 1971, Ser. No. 168,104
Int. Cl. B23b *13/04*
U.S. Cl. 82—2.5 13 Claims



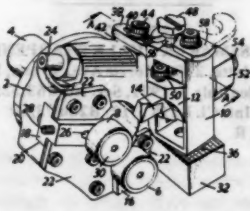
An apparatus for accurate axial aligning of a hollow workpiece. An expandable mandrel is loosely receivable within the workpiece and capable of expansion into firm fixed contact therewith for supporting and locating same. Positioning means are disposed adjacent to and outside of the workpiece substantially in radial opposition to the mandrel, the positioning means including shoes for contacting the exterior wall of the workpiece at first and second circumferentially spaced points thereon. The shoes are supported on the positioning means for limited movement with respect thereto substantially axially of the mandrel. Means are provided for supporting the positioning means for linear and universally pivotal movement and for urging same toward the workpiece and mandrel for causing the shoes to engage the workpiece, forcible engagement of the workpiece by the positioning means prior to expansion of the mandrel causing the workpiece to contact and become precisely axially aligned with the mandrel, the contact and alignment being maintained as the mandrel expands into gripping relation with the workpiece.

3,765,279

ROLLER BOX TOOLS

Albert Saunders, Peacehaven, England, assignor to The Saunders Roller Box Tool Company Limited, Sussex, England

Filed Oct. 17, 1972, Ser. No. 298,264
Int. Cl. B23b *29/00*
U.S. Cl. 82—35 6 Claims



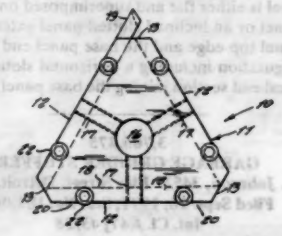
A roller box tool, for a lathe or like machine tool, wherein the tool mounting means include a toolpost secured by clamping means passing through an axially elongated slot to a platform extending axially from the body of the box tool, and in which the toolpost is further secured by means of an arm which is secured to the body of the box by means allowing location of the toolpost in any clamped position thereof relative to the platform whereby any tendency of the toolpost to be displaced under pressure is reduced without unduly adversely affecting the overall balance of the box tool.

3,765,280

TRIANGLE BIT HOLDER BLOCK

Brenis Phillips, Rt. 2, Box 208, French Creek, W. Va.

Filed Oct. 13, 1971, Ser. No. 188,821
Int. Cl. B23b *29/00*; B26d *1/00*
U.S. Cl. 82—36 4 Claims



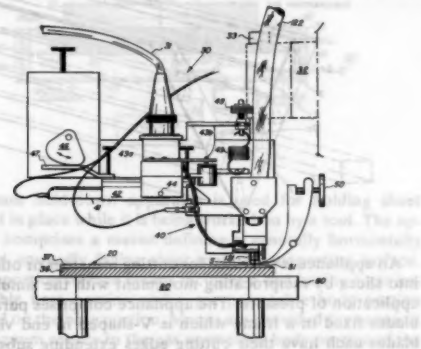
A cutting tool holder which consists of a block and which is recessed to hold six bits of which three may be retained at any one time, the block being held on a lathe carriage by a bolt.

3,765,281

METHOD AND APPARATUS FOR FABRICATING RADIATION-REDISTRIBUTIVE DEVICES

Robert N. Wolfe, Rochester; Beverly F. Palmer, Webster; Harvey O. Hoadley, and Roger S. Van Heyningen, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,334
Int. Cl. B26d *3/06*; B23d *1/26*
U.S. Cl. 83—5 5 Claims



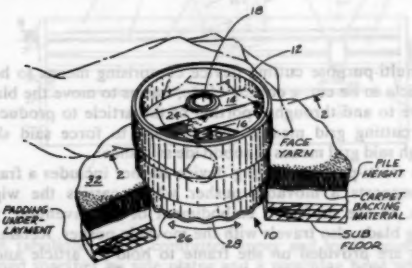
A method and apparatus for fabricating radiation-redistributive devices of the type comprising precisely contoured optical microelements each being adapted to redistribute incident radiation throughout a well-defined solid angle with uniform radiance throughout. The cutting stylus of a sound recording head is used as a cutting tool to contour such optical microelements in the surface of a workpiece. Desired contours are produced by shaping the cutting stylus to an appropriate cutting profile and by modulating the movement of the stylus in a vertical plane by applying an electrical signal of appropriate amplitude and waveform to the input of the recording head.

3,765,282

METHOD AND APPARATUS FOR CUTTING PLUGS FROM CARPETS

Millard Crain, Jr., San Jose, Calif., assignor to Crain Cutter Company, Inc., Santa Clara, Calif.

Division of Ser. No. 11,274, Feb. 13, 1970, abandoned. This application Sept. 2, 1971, Ser. No. 177,374
Int. Cl. B26d *1/00*; B26b *3/00*
U.S. Cl. 83—13 6 Claims



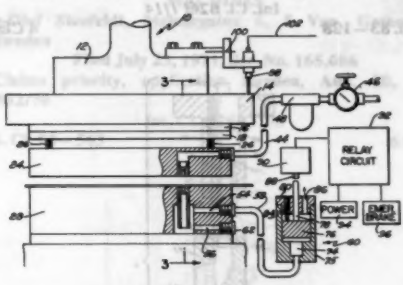
A method and apparatus for repairing carpets and similar materials wherein a segment of the damaged carpet to be replaced is anchored in place and held stationary, a cutter is then rotated about the outer periphery of said anchored damaged segment and simultaneously urged through the carpet along the longitudinal axis of the cutter cutting said carpet about the periphery of the anchored segment.

3,765,283

MATERIAL MISFEED DETECTOR FOR POWER PRESS

Patrick J. Murphy, II, R.F.D. 4, Box 420, 96 North St., Middleboro, Mass.

Filed Oct. 18, 1971, Ser. No. 189,873
Int. Cl. B26d *7/24*; B65h *25/08*, *25/32*
U.S. Cl. 83—61 9 Claims



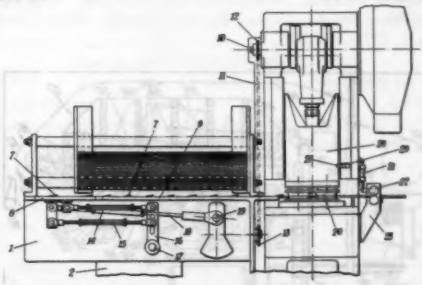
A material misfeed detector for a power press for discontinuing the operation of the power press on the upstroke thereof when a misfeed of the material is detected, the detecting device including a nozzle for directing a jet of air to a preformed opening formed in the material and a receiver located on the other side of the material in alignment with the nozzle and receiving the air therein, wherein the receiver directs the air to a pressure switch that is responsive to a predetermined pressure thereon to continue the operation of the power press.

3,765,284

PNEUMATIC CONVEYING DEVICE CONTROLLED BY AN ELECTRONIC PROGRAMMER FOR MACHINES FOR WORKING STACKED SHEET MATERIAL

Giuseppe Maiorino, Napoli, Italy, assignor to FMI–Mecford–Aziende Meccaniche Riunite S.p.A., Napoli, Italy

Filed Dec. 23, 1971, Ser. No. 211,326
Claims priority, application Italy, June 25, 1971, 51242 A/71
Int. Cl. B26d *5/36*
U.S. Cl. 83—71 3 Claims



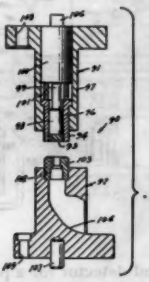
A pneumatic sheet or strip conveying device controlled by an electronic programmer, for machines for working stacked sheet material, particularly for automatic presses for manufacturing container covers and bottoms, wherein said pneumatic device consists of three pneumatic cylinders, of which the first cylinder is provided for taking a sheet or strip from the material stack, the second cylinder is provided for bringing said sheets onto mechanical means conveying the sheet under a working tool, and a third pneumatic cylinder for expelling the worked sheet, said pneumatic cylinders being controlled by electronic programmer means.

3,765,285

UNIVERSAL URETHANE DIE ASSEMBLY AND APPARATUS FOR USING SAME

Howard S. Archer, Flossmoor, Ill., and Harold Kaufmann, Rochester, Minn., assignors to Houdaille Industries, Inc., Buffalo, N.Y.

Division of Ser. No. 73,859, Sept. 21, 1970, Pat. No. 3,683,735. This application Mar. 1, 1972, Ser. No. 231,043
Int. Cl. B26f 1/14
U.S. Cl. 83—128 4 Claims



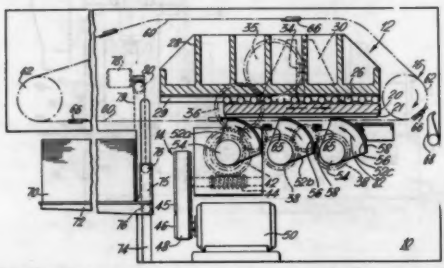
A universal urethane die assembly for use in blanking, forming, drawing, embossing and the like. The assembly includes a urethane pressure pad which is rectangularly shaped with rounded corners. The retaining ring which surrounds and supports the pressure pad has unique dimensional requirements. Other features of the die assembly include a visual indicator for ascertaining the degree of deflection of the die assembly. Also included is a turret punch press which has a single urethane die assembly in lieu of an upper turret. A punching unit which includes a urethane die assembly in conjunction with a die button for use on presses and press brakes.

3,765,286

CUTTING APPARATUS

Franz Vossen, Op Dem Felde, Germany

Filed Aug. 21, 1972, Ser. No. 282,174
Int. Cl. B23d 25/04, 25/12
U.S. Cl. 83—284 12 Claims



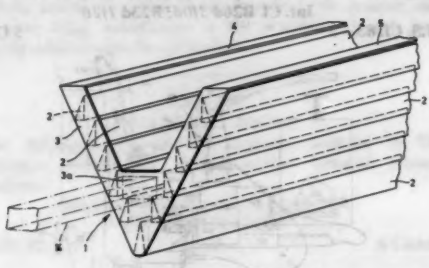
In a cutting apparatus for sheets of paper, cardboard, etc., a reciprocating cutting table carrying a cutting die cooperates with a counter cutting means subdivided in a plurality of individual cutting elements each rolling-off only a partial area of the cutting tool. This results in a considerable decrease in space required for a table stroke as well as in a shorter and therefore simpler guidance of the table.

3,765,287

APPLIANCE FOR CUTTING FRUITS

Alfred Borner, Pickliessemer Str. 3, Dudeldorf, Eifel, Germany

Filed Oct. 19, 1971, Ser. No. 190,626
Claims priority, application Germany, Oct. 22, 1970, P 20 51 780.0
Int. Cl. B26d 3/26
U.S. Cl. 83—407 9 Claims



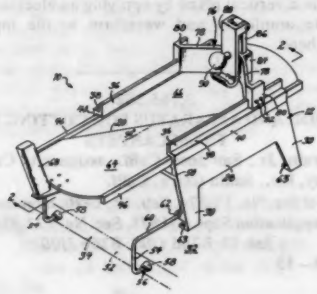
An appliance is provided for cutting tomatoes or other fruits into slices by reciprocating movement with the simultaneous application of pressure. The appliance comprises parallel saw blades fixed in a frame which is V-shaped in end view. The blades each have their cutting edges extending substantially vertically, the cutting edges of adjacent saw blades lying at different heights.

3,765,288

MULTI-PURPOSE CUTTING DEVICE

Clayton E. Giangiulio, 5 Skyline Dr., Malvern, Pa.

Filed May 21, 1971, Ser. No. 145,659
Int. Cl. A23p 1/00
U.S. Cl. 83—408 11 Claims



A multi-purpose cutting device comprising means to hold an article to be cut, a cutting blade, means to move the blade relative to and through a portion of the article to produce a slice, cutting grid means, wiper means to force said slice through said grid means to subdivide said slice.

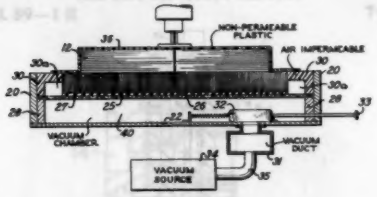
The multi-purpose cutting device further includes a frame that supports a movable pusher which carries the wiper means. In the preferred embodiment of the invention, the cutting blade also travels with the movable pusher. Retaining means are provided on the frame to hold an article and a cutting grid is also secured to the frame. The pusher moves relative to the retaining means so that the cutting blade is accordingly moved relative to and through a portion of the article to produce the slice which then drops down onto the grid as the pusher continues its stroke. The cutting of the article to produce the slice is closely followed up by the action of the wiper means which forces the cut portion of the slice through the grid means to produce, in the case of lettuce, a satisfactorily shredded product.

3,765,289

VACUUM HOLD-DOWN APPARATUS

Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Jan. 15, 1971, Ser. No. 106,686
Int. Cl. B26d 7/20
U.S. Cl. 83—452 19 Claims



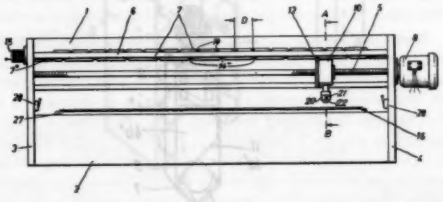
Vacuum hold-down apparatus is used for holding sheet material in place while it is being worked on by a tool. The apparatus comprises a means defining a generally horizontally disposed upwardly facing sheet material supporting surface. The supporting surface means includes a bed having a gas impermeable base portion and a gas permeable body portion disposed on the base portion. Means are provided for connecting a vacuum source to the gas permeable body portion of the bed to effect a vacuum within the body portion. A bed penetrable by a tool and a support means for the bed is disclosed as a combination in an apparatus for working on sheet material. The penetrable bed includes a gas impermeable base portion and a gas permeable body portion disposed on the base portion. A vacuum source is connected to the gas permeable body portion of the bed to hold the sheet material against a sheet material supporting surface while the sheet material is being worked on by the tool. Various specific embodiments of the vacuum hold-down apparatus are disclosed.

3,765,290

TABULATOR PUNCH

Hermann Luhrig, Leverkusen; Klaus Taeffner, Cologne; Gunter Pohl, Schlich; Gerhard Schmitz, Langenfeld, and Rudolf Kreit, Leverkusen-Rheindorf, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 15, 1972, Ser. No. 234,718
Claims priority, application Germany, Mar. 17, 1971, P 21 12 808.5
Int. Cl. B26f 1/02; B26d 5/02
U.S. Cl. 83—558 11 Claims



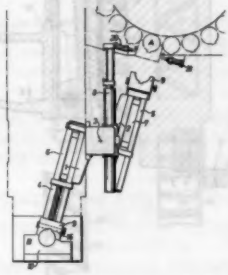
A tabulator punch comprises upper and lower crossheads joined together by side plates and a punching head which is displaceably mounted in the upper crosshead and which is connected to a spindle nut mounted on a rotatable threaded spindle. The spindle nut is rotatably mounted in the punching head and has an eccentric the rotation of which is adapted to reciprocate a punching blade and a disc at one end thereof. Disc on the other hand is fixedly connected to the spindle nut and is provided on its outer periphery with a groove which is parallel to the spindle axis and adapted to engage in a guide rail which is also parallel to the spindle and which has spaced-apart notches therein the width of each of these notches being greater than the thickness of the disc.

3,765,291

TOOL GRIPPING AND GUIDING DEVICE FOR TOOL EXCHANGER FOR PUNCHING AND NIBBLING MACHINES

Jan-Olof Stenfeldt, Meteorgatan 6, 5 Van, Gothenburg, Sweden

Filed July 23, 1971, Ser. No. 165,086
Claims priority, application Sweden, Aug. 20, 1970, 11352/70
Int. Cl. B26d 5/08
U.S. Cl. 83—563 6 Claims



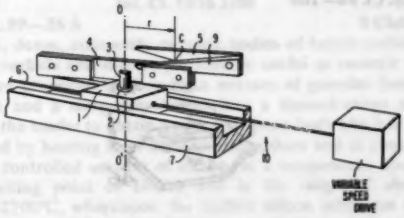
An apparatus for transferring a tool from a non-working position to a working position in punching machines or the like, wherein the means for transferring the tool comprises a fluid actuated member with tool gripping means disposed on the end thereof.

3,765,292

CUTTING DEVICE FOR A MOVING WEB

Kiyokazu Fujiwara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 17, 1971, Ser. No. 209,212
Claims priority, application Japan, Dec. 17, 1970, 45/113921
Int. Cl. B26d 7/26, 1/04
U.S. Cl. 83—614 5 Claims



A rotatable cutter member is mounted on a movable carrier such that its center of gravity is located on the shaft connected to the movable carrier. Thus, the cutter member can freely position itself relative to a moving web that is to be cut without introducing unwanted tension or an irregular cut line. A guide track supports the movement of the carrier while the cutter member forms a V-notch cutting edge.

3,765,293

OVERLOAD PROTECTION ARRANGEMENT FOR PLATE SHEARS

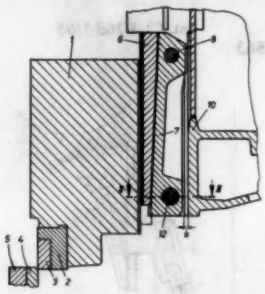
Gunter Karl Fries, Neunkirchen-Saar, and Ernst-Gunther Oberhauser, Rohrbach-Saar, both of Germany, assignors to Moeller & Neumann G.m.b.H., Ingbert-Saar, Germany

Filed Feb. 24, 1972, Ser. No. 229,051

Claims priority, application Germany, Feb. 26, 1971, P 71 07 288.3

Int. Cl. B26d 7/22

U.S. Cl. 83—698 2 Claims



A plate shears includes a displaceable member which is disposed in the force flow of the horizontal cutting force component occurring during a cut, the displaceable member being associated with a fracture member which fractures when the horizontal force component increases excessively and which permits the respective cutter carrier supported by the displaceable member to perform a yielding movement.

3,765,294

TEACHING DEVICE FOR ATTACHMENT TO A KEYBOARD INSTRUMENT

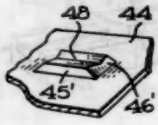
Juan M. Del Castillo, Risco No. 119, Mexico City, Mexico

Continuation of Ser. No. 135,601, April 20, 1971, Pat. No. 3,709,085. This application June 29, 1972, Ser. No. 267,387

Claims priority, application Mexico, Apr. 20, 1970, 118,786; June 26, 1970, 120,374; July 10, 1970, 120,687; Aug. 3, 1970, 121258

Int. Cl. G10f 5/04

U.S. Cl. 84—166 1 Claim



A device non-integral with the keyboard instrument with which it is used is activated through sheet, card or substitute keyboard means to activate in turn indicating heads mounted over the keyboard of an organ, piano or similar instrument and which designate the keys to be played by lighting or solenoid controlled means. The control sheet or card may utilize raised, indented, or apertured sheets or cards detected through various type contact or photocell means which feed the signal through an elelctronic relay to the indicating means.

3,765,295

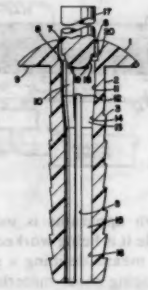
PLASTIC DRIVE PIN ANCHOR

Wilbur F. Ptak, Middleburg Heights, Ohio, assignor to Fastway Fasteners, Inc., Lorain, Ohio

Filed Aug. 18, 1971, Ser. No. 172,841

Int. Cl. F16b 13/06

U.S. Cl. 85—72 6 Claims



A plastic drive-pin anchor is disclosed of the type in which the drive-pin is molded integrally with an expandable fastener or anchor. The pin is provided with circumferentially spaced ribs which are so located in relation to the anchor and so connected or molded integrally with the anchor as not only to resist accidental breakage of the pin from the anchor, but also to facilitate shearing of the pin from the anchor when the pin is driven into the anchor to expand the latter.

3,765,296

EXPANSION ANCHOR FOR USE IN SUPPORT STRUCTURES OF RELATIVELY SOFT MATERIAL

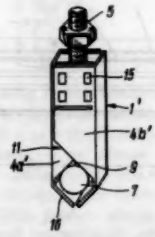
Artur Fischer, Altheimer Strasse 219, Tumlingen, Germany

Filed Aug. 30, 1971, Ser. No. 176,121

Claims priority, application Germany, Sept. 3, 1970, P 20 43 621.9

Int. Cl. F16b 13/06

U.S. Cl. 85—76 8 Claims



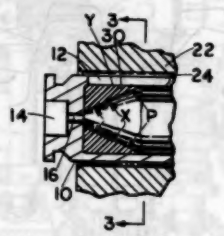
An expansion anchor sleeve is composed of two elongated shell sections of U-shaped cross-section whose open sides face one another and are bounded by juxtaposed edge faces. A transverse recess is provided in the front portion of the sleeve tapering towards the rear portion and bounded by sections of the aforementioned edge faces on which an expander member, located in the recess, rides when it is drawn rearwardly by a threaded actuating member.

3,765,297

NON-ERODING, LIGHTWEIGHT CARTRIDGE CASES

Leonard W. Skochko, Philadelphia, and Reed E. Donnard, Huntingdon Valley, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 6, 1972, Ser. No. 260,076
Int. Cl. F41f *1/00*; F42b *9/26*
U.S. Cl. 89—1 R 7 Claims



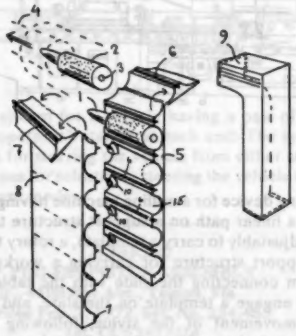
A lightweight cartridge case, preferably of aluminum, has a pliable and ductile sealing element disposed at a rearward portion of the case interior where a split in the case is expected to occur upon firing of the cartridge, the sealing element sealing off hot gas escape through the split, between the bolt and the weapon chamber, thus preventing surface erosion thereof and providing safety to the weapon operator.

3,765,298

DEVICE FOR THE PROTECTIVE CHARGING OF CASE-LESS CARTRIDGES

Eric W. Wallberg, Vallingby, Sweden, assignor to Forenade Fabriksverken, Eskilstuna, Sweden

Filed Nov. 10, 1971, Ser. No. 197,281
Claims priority, application Sweden, Nov. 24, 1970, 15875/70
Int. Cl. E41c *25/00*
U.S. Cl. 89—34 5 Claims



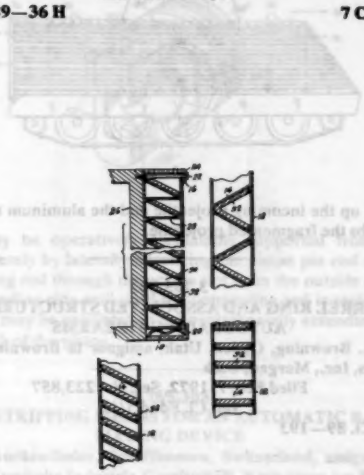
A device for simplifying the handling of case-less cartridges, said device comprising a cassette composed of two halves made of frangible or fragile material and forming a compartment for each cartridge, said cassette when completely filled with new cartridges being pushed down into a magazine by means of an auxiliary guiding frame or cover that has resilient means for advancing the cassette. The compartment has walls which include wedge-like cartridge shoulder-supporting means that convey to said walls a lateral force, breaking up or dividing each cassette compartment as the cartridge emerges from the magazine. Each cartridge is pushed under the action of an advancing cartridge seating means such as a breech block during firing procedure.

3,765,299

UNIVERSAL APPLIQUE ARMOR

Victor H. Pagano, Rochester, and Zygmunt J. Fabrykowski, Detroit, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 6, 1968, Ser. No. 758,656
Int. Cl. F41h *7/04*
U.S. Cl. 89—36 H 7 Claims



An envelope or panel member having formed therein a plurality of angled holding slots adopted to loosely support armor elements disposed in the designated holding slots. Air space areas within the envelope can be sealed or filled with plastic, or the like, depending on need for buoyancy to overall vehicle design. In this developed form, a complete panel or envelope is ready for application to the side of an armored vehicle.

3,765,300

DENSE CARBIDE COMPOSITE FOR ARMOR AND ABRASIVES

Kenneth M. Taylor, Niagara Falls, and Richard J. Palicka, Youngstown, both of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed May 22, 1967, Ser. No. 640,327
Int. Cl. F41h *5/00*
U.S. Cl. 89—36 A 8 Claims

Hard, dense, composite ceramic bodies of boron carbide, silicon carbide and silicon, particularly useful as ceramic armor, are produced by forming a mixture of granular boron carbide and a temporary binder into a desired shape and setting the binder to obtain a coherent green body which is siliconized by heating it, in an inert atmosphere and in contact with a controlled amount of silicon, to a temperature above the melting point of silicon and in the range of about 1500°–2200°C, whereupon the molten silicon infiltrates the body and reacts with some of the boron carbide thereof.

3,765,301

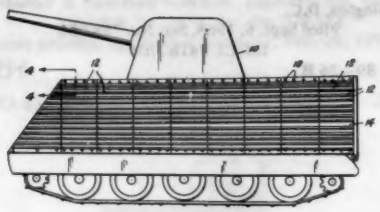
LIGHT WEIGHT RIBBED COMPOSITE ARMOR

Victor H. Pagano, Rochester, and Harry Spiro, Detroit, both of Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 9, 1968, Ser. No. 697,565
Int. Cl. F41h *7/04*
U.S. Cl. 89—36 H 7 Claims

A combination of a steel ribbed plate bolted to an aluminum tank shell, wherein the ribbed plate is made up of a series of

short vertical or inclined high hardness plates welded to a lower hardness steel plate wherein the initial ribbed plates



break up the incoming projectile and the aluminum tank shell absorbs the fragmented projectile.

3,765,302

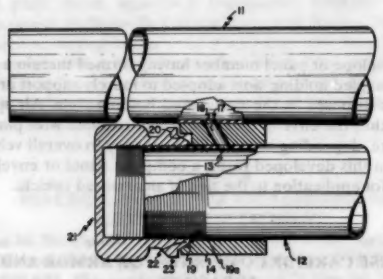
BARREL RING AND ASSOCIATED STRUCTURE FOR AUTOLOADING FIREARMS

Val A. Browning, Ogden, Utah, assignor to Browning Industries, Inc., Morgan, Utah

Filed Feb. 7, 1972, Ser. No. 223,857

Int. Cl. F41d *5/12*

U.S. Cl. 89—193 **6 Claims**



A barrel ring, which surrounds the magazine tube of an auto-loading firearm in an easy sliding fit, is provided with an extending tapered lip on its lower forward edge; a cap which is provided to close around the tube end at the barrel ring has a rim configurated to bear upon the inner surface of the lip as the cap is advanced toward the ring. In this fashion, the magazine tube is forced into tight contact with the upper inner surface of the ring.

3,765,303

INVOLUTE TOOTH SYSTEM FOR HELICAL GEARS AND FINISHING GEAR TOOL

Alois Fischer, and Franz Hill, both of Friedrichshafen, Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

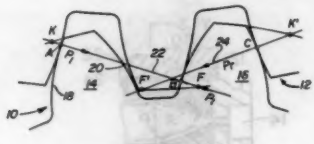
Filed Mar. 8, 1971, Ser. No. 122,085

Claims priority, application Germany, Mar. 10, 1970, P 20 11 245.2

Int. Cl. B23f *19/06*

U.S. Cl. 90—1.6 **5 Claims**

Helical gears adapted to mesh while rotated about parallel axes, are finished by meshing engagement with a shaving cutter gear rotated about an axis at a fixed cutting angle to the rotational axis of the helical gear being finished. A contact ratio close to but never less than one is established during meshing engagement between the helical gear being finished and the finishing gear by designing the helical gear teeth



profiles within the limits of a contact ratio range applicable to meshing helical gears rotating about parallel axes.

3,765,304

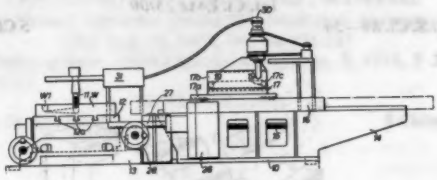
COPYING DEVICES FOR MILLING MACHINES

Walter Francis Hayward, Wolverhampton, England, assignor to Hampson, Jig, Tool & Automation, Limited, Wolverhampton, England; a part interest

Filed Sept. 15, 1970, Ser. No. 72,725

Int. Cl. B23c *1/18*

U.S. Cl. 90—13.9 **3 Claims**



A copying device for a milling machine having a slide movable along a linear path on a support structure the slide being adapted adjustably to carry a template, a rotary table mounted on the support structure for carrying a workpiece, a drive mechanism connecting the slide with the table, a stylus arranged to engage a template on the slide, and a mechanism whereby movement of the stylus, following the template profile controls the position of a tool which engages the workpiece, adjustment of the template being possible in two planes which are mutually transverse and which are both transverse with respect to the linear path of movement of the template.

3,765,305

APPARATUS FOR MAKING VALVE SLEEVES

Arthur E. Bishop, 5516 Westwood Ln., Birmingham, Mich.

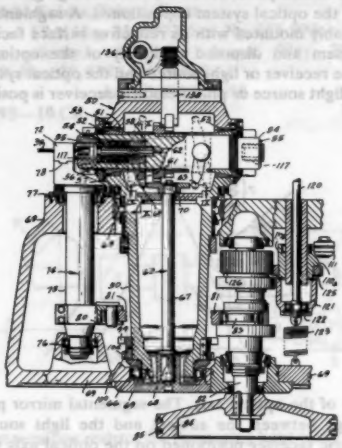
Division of Ser. No. 714,509, March 20, 1968, Pat. No. 3,591,139. This application Mar. 16, 1971, Ser. No. 124,902

Int. Cl. S23d *5/00*

U.S. Cl. 90—24 R **4 Claims**

Apparatus for manufacturing a cylindrical sleeve for a hydraulic flow control valve, in which sleeve a plurality of lon-

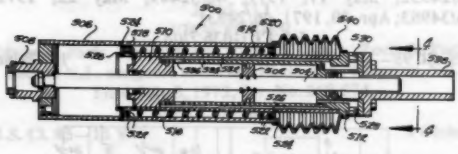
gitudinally extending peripherally spaced grooves are provided in the bore, such that the grooves terminate axially internally of the sleeve and in such a manner that the sleeve is constructed in one piece.



3,765,306
SENSING CYLINDER

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 52,940, July 7, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,376
Int. Cl. F01b *31/10, 15/02*
U.S. Cl. 92—117 A 5 Claims



A steering system for a vehicle having a pair of steerable axles and an operator's station at each end. The system provides a means for steering the vehicle from either station and provides a means for selectively steering the vehicle in any one of three different modes.

3,765,307
PINLESS PISTON ASSEMBLY

John S. Neel, Jr., 4108 Bay Ave., Tampa, Fla.

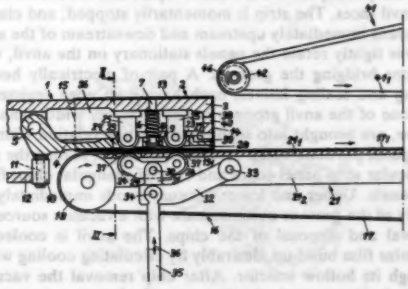
Filed Feb. 7, 1972, Ser. No. 224,485
Int. Cl. F16j *1/14*
U.S. Cl. 92—187 9 Claims

The piston includes a diametric connecting rod mounting web adjacent its skirt end and the web is provided with a transverse bore opening through the opposite sides of the web. A central axially extending slot is formed in the web intermediate its opposite sides with one end of the slot opening radially into the transverse bore formed through the web centrally intermediate its opposite ends and its other end opening outwardly of the portion of the web facing outwardly of the skirt end of the piston. The slot divides the adjacent portions of the web into opposite side walls between which the slot is defined and through which the opposite ends of the bore open and one of the side walls includes an access slot formed therethrough opening into the corresponding end of the bore at one end and through the outwardly facing portion of the web at its other end. The access slot is communicated, throughout its length, with the axially extending central slot formed in the web and thus the piston pin end of a connecting rod having laterally outwardly projecting piston pin shaft portions may be operatively oscillatably supported from the piston merely by laterally advancing the piston pin end of the connecting rod through the access slot from the outside of the corresponding side wall until the connecting rod is registered with and may be oscillated in the central axially extending slot in the web of the piston.

3,765,308
BAG STRIPPING MEANS FOR AN AUTOMATIC BAG MAKING DEVICE

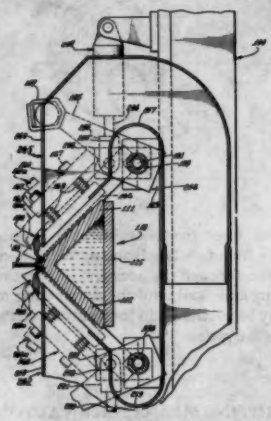
Robert Auckenthaler, Schaffhausen, Switzerland, assignor to Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jan. 3, 1972, Ser. No. 214,792
Claims priority, application Switzerland, Jan. 6, 1971, 137/71
Int. Cl. B31b *1/28*
U.S. Cl. 93—12 R 5 Claims



The bag stripping device is provided with an endless continuously moving stripping band whose upper horizontal stringer is urged by a pair of rollers on a rocker against the lower horizontal side wall of a bag which is formed by folding and gluing a blank on a horizontally disposed mandrel. The mandrel is provided with a pivotally mounted horizontal jaw adapted to loosely engage the inner face of said horizontal wall of the bag, and two rollers within said mandrel are oppositely disposed to said above mentioned pair of rollers for engaging said horizontal side wall of the bag and permit a stripping of the bag from the mandrel by the lengthwise movement of said stripping band. After the bag has been stripped from the mandrel the bag is engaged between an endless upper bag engaging member and said stripping band and is tilted at the end of said stripping band and transferred to a conveyor which moves the bag in an upright position to a bag filling device.

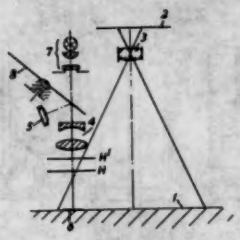
3,765,309
BAG BOTTOM CONSTRUCTION
Richard L. Joice, c/o Universal Machinery Corporation, 8955 Fullbright Ave., Chatsworth, Calif.
Filed Aug. 16, 1971, Ser. No. 172,049
Int. Cl. B31b 1/64, 49/04
U.S. Cl. 93—35 SB 11 Claims



A machine and method for forming a single thickness bottom in a bag of heat-sealable sheet material such as polyethylene film from a folded strip of such material of indefinite length, the folded edge having an inwardly folded gusset therein forming a pair of double thickness marginal panel portions. The machine includes an anvil having longitudinally extending faces lying in planes symmetrically inclined above and below a central horizontal plane, each anvil face having a groove formed therein in the shape of two legs of an isosceles right triangle whose altitude lies in a vertical plane perpendicular to the direction of strip movement. During strip movement the panel portions are folded apart and are drawn along the anvil faces. The strip is momentarily stopped, and clamping means immediately upstream and downstream of the anvil grooves tightly retain the panels stationary on the anvil, with portions bridging the grooves. A pair of electrically heated cutting and sealing knives, each having an edge registering with one of the anvil grooves but of narrower width than the groove, are brought into sealing and cutting relation with the strip panel portions which bridge the grooves, sealing the perpendicular strip panel edges and cutting triangular chips from the panels. Upper and lower vacuum hoods immediately inwardly of the grooves communicate with a vacuum source for removal and disposal of the chips. The anvil is cooled to minimize film build-up, desirably by circulating cooling water through its hollow interior. After chip removal the vacuum supply is interrupted, the knives and clamping means are retracted, and the strip is then indexed downstream, with means being provided to support the strip panels in a common plane with the remaining portion of the strip. Individual bags are formed from the strip downstream of the present machine by conventional sealing and cutting transversely of the strip intersecting the apex of the triangular cut-outs in the strip panels.

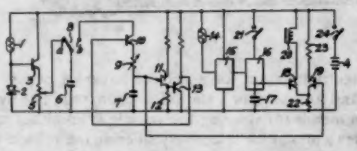
3,765,310
OPTICAL SYSTEM
Rolf Jurenz, and Horst Kodalle, both of Dresden, Germany, assignors to VEB Pentacon Dresden Kamera-und Kinowerke, Dresden, Germany
Filed Nov. 12, 1971, Ser. No. 198,327
Int. Cl. G01j 1/02
U.S. Cl. 95—10 R 2 Claims

A photo-electric measuring device includes an optical system for directing light emanating from a subject to be reproduced along an optical axis. Along the optical axis, a light source for projecting a light spot onto the subject via the optical system or a photo receiver for receiving light from the subject via the optical system is positioned. A segmental mirror is rotatably mounted with its reflective surface facing the optical system and disposed obliquely of the optical axis between the receiver or light source and the optical system. A respective light source or photo-electric receiver is positioned



on the side of the optical axis. The segmental mirror permits light passage between the subject and the light source or photo-electric receiver positioned on the optical axis when a non reflective segment is positioned transversely of the optical axis and reflection of light between the photo-electric receiver or light source and the subject when a reflective segment of the mirror is positioned transversely of the optical axis to provide a light spot on the subject indicative of the measurement field and to detect light intensity of the measurement field.

3,765,311
INFORMATION CONVERTER
Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Apr. 10, 1972, Ser. No. 242,668
Claims priority, application Japan, Apr. 20, 1971, 46/24932; May 17, 1971, 46/32449; May 22, 1971, 46/34983; Apr. 20, 1971, 46/24931
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 15 Claims

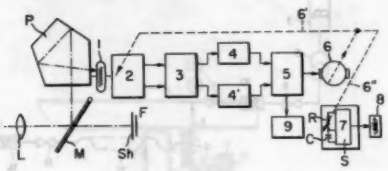


An information converter for converting analog-information not only into a digital value but also into a fractional analog value between digital values. An input capacitor stores an analog-information charge. An input is electrically connected with this input capacitor for charging the latter to an extent determined by the analog information. An output capacitor is provided with a capacitance less than that of the input capacitor. An oscillating circuit is electrically connected with both of the capacitors for carrying out a number of charge-discharge cycles during which the output capacitor is charged from the analog-information charge of the input capacitor up to a predetermined digital-value charge, then discharged, then charged again, and so on, until, in the event that the analog-information charge is not a precise multiple of the digital-value charge, both of the capacitors assume a balanced condition where they respectively have equal residual analog charges each of which is less than the digital-value charge. A detecting circuit is electrically connected with at least one of the capacitors for detecting the residual analog charge.

3,765,312
EXPOSURE CONTROL DEVICE

Yoshiyuki Takishima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,998
Claims priority, application Japan, May 28, 1971, 46/36799; May 28, 1971, 46/36800
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CE 10 Claims

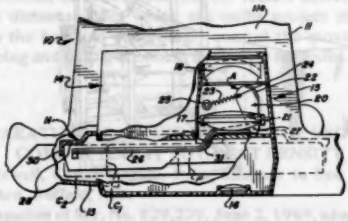


A light sensitive resistor for measuring light value of a scene to be photographed is in a bridge circuit from which the unbalance signal operates switches either to light lamps for guiding manual adjustment of exposure factors or to control a servomotor that makes the necessary adjustments. These adjustments, whether automatic or manual, produce changes in the bridge elements, so that balance of the bridge is reached when the proper exposure factor settings are made. Control of the servomotor and/or indication lamps is accomplished by means of an astable multivibrator of which the effective polarity of the output is changed by changing the duty cycle. The exposure factor adjustment obtained by balancing the bridge is stored in the value of a variable resistor which, after the shutter is released, controls, for example, the exposure time.

3,765,313
VIEW FINDER

Edwin E. Faris, Wyckoff, and Richard Kopala, Rochelle Park, both of N.J., assignors to Berkey Photo, Inc., Paramus, N.J.

Filed July 3, 1972, Ser. No. 268,574
Int. Cl. G03b 19/00
U.S. Cl. 95—11 V 9 Claims



A view finder is provided for a camera wherein the latter is adapted to accommodate film cartridges or packets of two different sizes. The viewfinder is carried on the camera and is adapted to automatically vary by means of an adjustably mounted masking piece the size of the viewing area to be observed through the viewfinder so as to coordinate same with the size film being used in the camera. The adjustment of the masking piece is effected during loading of a given size film cartridge into the camera. Thus, the viewfinder facilitates proper manual aligning of the camera lens with the subject being photographed.

3,765,314
CAMERA ATTACHMENT

Miklos B. Horvath; Daniel Etherton, both of Redmond, and Neel Wilson, Bellevue, all of Wash., assignors to Synetix Industries, Redmond, Wash.

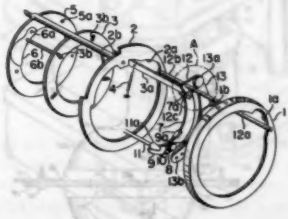
Filed Apr. 5, 1972, Ser. No. 241,108
Int. Cl. G03b 19/02
U.S. Cl. 95—36 1 Claim

This invention is a device that slips over the lens mount of a camera. The device is somewhat cylindrical in shape where the end opposite the end on the lens mount has an opening that shades approximately one-half of the film when a picture is taken. By rotating the device 180°, the other one-half of the film is shaded. The device thus allows the combining of two scenes onto one picture frame.

3,765,315
DEVICE FOR INTERCHANGEABLE LENSES FOR SWITCHING BETWEEN EXPOSURE METER OPERATION AND MANUAL EXPOSURE OPERATION

Saburo Hokari, Kawasaki-shi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 10, 1972, Ser. No. 251,977
Claims priority, application Japan, May 10, 1971, 46/30520
Int. Cl. G03b 9/02
U.S. Cl. 95—64 R 5 Claims



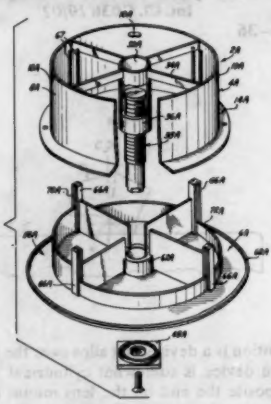
A device for interchangeable lenses of screw mount type for switching between EE (electronic eye) exposure operation and manual exposure operation is provided which generally comprises an EE aperture setting ring, an EE-Manual switching ring which is also used as a manual aperture setting ring, and a rocking lever which may be selectively engaged with either of said two rings. When the switching ring is set to the manual exposure operation, the rocking lever engages with the manual aperture setting cam surface of the switching ring and is limited in rotation, but when the switching ring is set to the EE exposure operation, the rocking lever is disengaged from the manual aperture setting cam surface and is engaged with the EE aperture setting cam surface of the EE aperture setting ring and is limited in rotation. An aperture blade actuating ring is rotated in response to the angle of rotation of said rocking lever to close aperture blades to a selected aperture.

3,765,316

ADJUSTABLE AND CLOSEABLE AIR DIFFUSER

Edward L. Skoch, 28 Terrehans Lane, Syosset, N.Y.

Filed Apr. 5, 1971, Ser. No. 131,170
Int. Cl. F24f 13/06
U.S. Cl. 98—40 D 18 Claims



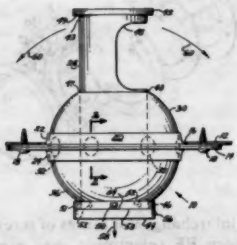
An air diffuser to be connected in a hot or cold air distribution system and including a vaned upper section to be connected with a supply duct and a vaned lower section telescopically and adjustably connected with the upper section for distributing the air in a room, Baffle plates are insertable between the outer ends of adjacent vanes on the lower section for blocking or proportioning air flow. A single knob member regulates the volume of air flow and can be manipulated to shut off all air flow.

3,765,317

ADJUSTABLE NOZZLE ASSEMBLY

Robert A. Lowe, P.O. Box 8625, Los Angeles, Calif.

Filed Nov. 29, 1972, Ser. No. 310,414
Int. Cl. F24f 13/08, 13/06
U.S. Cl. 98—40 A 11 Claims



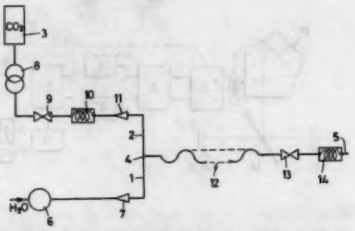
An adjustable nozzle assembly primarily for use in air ducts where it is desired to direct a localized flow of air to a predetermined position. The assembly includes a nozzle tube, a spherical member through which the nozzle tube passes and a base which allows rotation of the spherical member and attaches the assembly to the air conditioning duct. The nozzle tube includes a cutout in the side thereof so that by moving the nozzle tube inward or outward with respect to the spherical member, the cutout allows more or less flow as desired. The direction of the flow is adjusted by rotating the spherical member until the nozzle tube points in the desired directon. Predetermined clearances are also provided between the members of the assembly to prevent condensation of water vapor thereon.

3,765,318

DEVICE FOR THE PRODUCTION OF CARBONATED BEVERAGES

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pardenone, Italy

Filed Jan. 25, 1972, Ser. No. 220,581
Claims priority, application Italy, Feb. 24, 1971, 20986 A/71
Int. Cl. A23l 1/00
U.S. Cl. 99—275 4 Claims



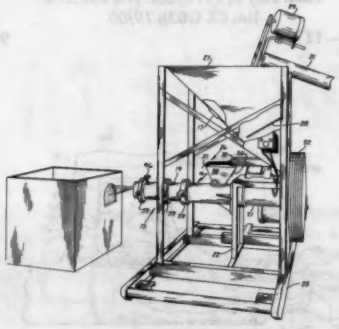
A device for the production of carbonated beverages, particularly carbonated water, is disclosed, wherein two separate feed ducts are provided for the water to be carbonated and for the carbon dioxide respectively, these ducts merging into an outlet duct so that the feed duct of the carbon dioxide is axially inserted in the water feed duct, two independent pressure controls being provided in the carbon dioxide and in the outlet duct respectively, whereby a very good turbulent mixing motion is established downstream of the merging section.

3,765,319

MACHINE FOR TREATING SOYBEANS

Wayne F. Fox, Des Moines, Iowa, assignor to Triple "F," Inc., Des Moines, Iowa

Continuation-in-part of Ser. No. 25,948, April 6, 1970. This application May 30, 1972, Ser. No. 257,928
Int. Cl. A23k 1/00
U.S. Cl. 99—343 5 Claims

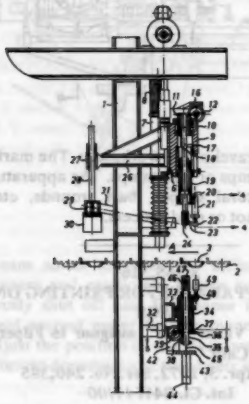


The machine provides for the continuous cooking of harvested or raw untreated soybeans to remove heat labile growth inhibitors and the beany bitterness of soybeans without destroying, or rendering unavailable for digestion, some of the amino acids. The whole raw untreated soybean at ambient temperature is augered through an extruder under progressively increasing pressures so that the resultant friction and pressure develop a cooking heat in the beans of at least about 240° F. The cooked material is expelled from a die head and into the atmosphere in a jet-like fluid stream to form a resultant product which consists of loose agglomerates that may be fed directly to humans, livestock and poultry.

3,765,320
ONION END CUTTER

Albertus van Raay, Ulft, Netherlands, assignor to N. V. Machinenfabrik Finis, Ulft, Netherlands

Filed Jan. 11, 1971, Ser. No. 105,239
Claims priority, application Netherlands, Jan. 23, 1970, 7000942
Int. Cl. A23n *15/04*
U.S. Cl. 99—636 14 Claims



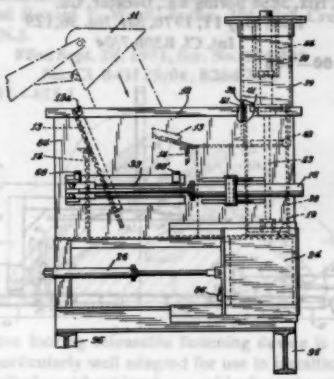
A device for topping and tailing crops, particularly onions, said device comprising a conveyor belt for feeding the bulbs arranged in openings of the conveyor belt and at least one topping and tailing member arranged above and beneath the conveyor belt, said members being displaceable in a direction normal to the conveyor belt in order to occupy a desired position relative to the bulbs for removing the heads and tails of the bulbs and including feelers cooperating with the bulbs and limiting the displacement of the topping and tailing members in said normal direction, wherein the feelers detect only the greatest distances over which the bulbs project above and beneath the belt and accordingly control the movements of the topping and tailing members relative to the bulbs.

3,765,321
APPARATUS FOR AIDING DISPOSAL OF SNOW BY COMPACTING IT TO GREAT DENSITY

Keith Newell, Cedar Rapids, Iowa, assignor to Sno Pac Corporation, Buffalo, N.Y.

Continuation of Ser. No. 829,229, June 2, 1969, abandoned.
This application Dec. 3, 1971, Ser. No. 204,533
Int. Cl. B30b *15/32*
U.S. Cl. 100—45 30 Claims

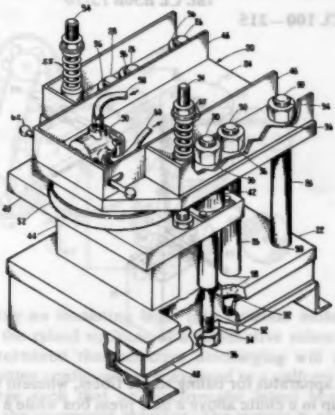
Snow is dumped into a portable compressor which compresses the snow by hydraulic power through three stages into blocks of great density which require much less space than the original show and can hence be carried away with greater economy, or piled up with less commandeering of usable space. Hydraulic strokes are controlled by limit switches. When sufficient density is achieved in the final stage, the hydraulic pressure trips a switch which opens a gate so that continued cycling of the compacting apparatus ejects a highly compacted block of snow. When far enough out, it trips a switch to cause the gate to close, shearing off the projecting block, and dropping the block onto a conveyor. The combination of a swinging guard and pusher plate jointly forming one wall of the hopper permits handling huge quantities of snow.



3,765,322
INDUSTRIAL MACHINE PRESS HAVING MULTI POST STRUCTURE PROVIDING OPEN WORK AREA FREELY ACCESSIBLE FROM THREE SIDES

Paul P. Weyer, c/o Weyer Machine & Engr. Co., 322 N. Railroad Ave., Renton, Wash.

Filed Aug. 9, 1971, Ser. No. 170,190
Int. Cl. B30b *15/28*, *15/04*
U.S. Cl. 100—53 17 Claims



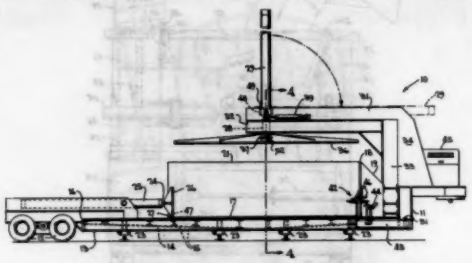
An industrial machine press having multiple post structures providing an open work receiving and forming area freely accessible from three sides without obstruction, utilizes some of the structural posts for the additional function of guiding a movable upper platen. All posts during pressing operations are sustaining either tension or compression loads without the creation of bending stresses in them. Their lower portions are rigidly mounted to a stationary platen and its supporting structure, and their upper portions are less rigidly mounted to upper positioning structure. Preferably all posts are equally sized and placed to withstand similar loadings, being grouped, as necessary, to supplement one another and remain free of bending stresses thereby assuring the upper and lower platens remain parallel to one another at all times. An embodiment particularly directed to fully utilizing posts sized and placed to withstand similar loadings, has six posts, with four in tension and two in compression.

3,765,323

PORTABLE BALING PRESS

Henry M. Hix, 3856 Boring Rd., Decatur, Ga.

Filed May 11, 1970, Ser. No. 36,129
Int. Cl. B30b 7/04
U.S. Cl. 100—100 **6 Claims**



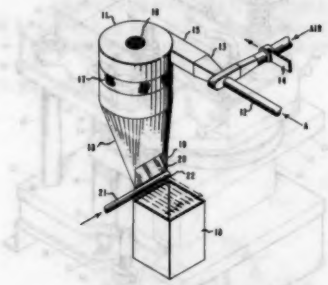
A portable press for baling a stripped automobile body is mounted on a flat bed trailer which includes both horizontal and vertical compacting means cooperating with a front and a side wall on the trailer during the baling operation. The vertical compacting means is movable between its vertically operative position and a horizontal travelling position and an operation/control unit is mounted to the trailer bed for movement between a working and a non-working position.

3,765,324

APPARATUS FOR BALING FIBERS

Joseph Thomas O'Neill, Brockville, Ontario, Canada, assignor to Du Pont of Canada, Limited, Montreal, Quebec, Canada

Filed June 14, 1971, Ser. No. 152,724
Int. Cl. B30b 15/30
U.S. Cl. 100—215 **3 Claims**



An apparatus for baling staple fibers, wherein the fibers are held up in a chute above a bale press box while a tamper compresses layers of fiber already in the box. When the tamper is raised, staple fibers drop from the chute and are subjected to horizontally directed fluid forces which distribute the added fibers in a uniform layer in the box. The resulting bales have relatively uniform dimensions, even density throughout and increased overall weight.

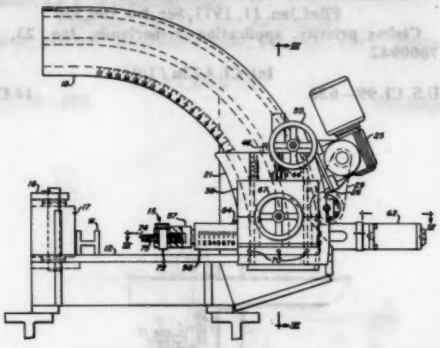
3,765,325

APPARATUS FOR MARKING A MOVING ELONGATED WORKPIECE

Loyal D. Warren, Birmingham, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 19, 1972, Ser. No. 219,061
Int. Cl. B41f 17/10, 17/20
U.S. Cl. 101—6 **13 Claims**

Apparatus for marking an elongated workpiece comprising a marking wheel rotatably mounted in a yoke which is movable against the workpiece as the workpiece is moving, is mounted for horizontal adjustment, vertical adjustment, and arcuate or angular adjustment on a curved way in a plane normal to the path of travel of the workpiece. The marking wheel may contain die stamps or ink stamps. The apparatus continuously marks structural shapes, bars, rounds, etc., or flat product in either a hot or cold process.

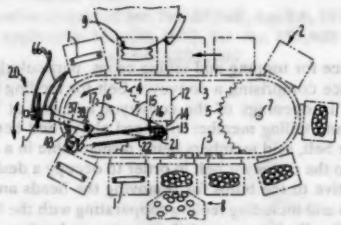


3,765,326

METHOD AND APPARATUS FOR PRINTING ON EMPTY BAGS

David N. Hawkins, Victor, N.Y., assignor to Filper Corporation, San Ramon, Calif.

Filed Apr. 3, 1972, Ser. No. 240,385
Int. Cl. B41f 17/00
U.S. Cl. 101—44 **5 Claims**



A printer for printing material on empty bags suspended from their upper ends for filling and for continuous movement to and past a filling station, with the bags in a row and moving in a path extending longitudinally of the row. The printer follows the bag during printing, clamping the empty bag during printing and thereafter releasing the printed bag for filling, and returns to engage and print the next suspended empty bag.

3,765,327

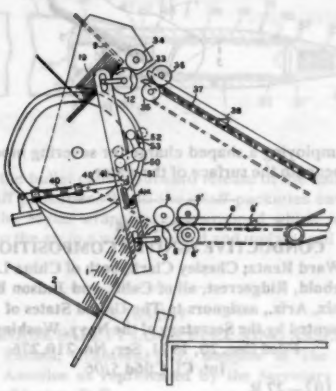
DUAL FEEDING PRINTING PRESS

Theodore F. Aronson, Fort Lauderdale, Fla., and Vincent A. Polidori, East Quogue, N.Y., assignors to Ira B. Kristel, Hewlett Harbor, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,924
Claims priority, application France, Oct. 4, 1971, 7135627
Int. Cl. B65h 3/06, 3/44
U.S. Cl. 101—232 **6 Claims**

In a printing press of the type having a plate cylinder and an impression cylinder. A first feeder to feed papers to said cylinders on a first line tangent to said plate cylinder and said impression cylinder. A second envelope feeder means to feed envelopes to said cylinders on a second line at an angle to said first line. Letterheads may be printed on the papers from the

first feeding means and the envelopes fed from the second feeder may be printed after the said papers are printed, with the same name and address, without changing the printing plate. Means are provided to shift the position of one of said cylinders when said envelopes are being fed by said second



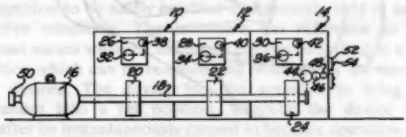
feeding means so as to adjust for difference in thickness between papers and envelopes. Means are also provided to simultaneously shut off said first paper feeding means and energize said second paper feeding means. Means are provided to adjust the position of the take-away rollers to accommodate different dimensions of the sheets and said envelopes.

3,765,328

INKER CAM DRIVE SYSTEM

Ernest H. Treff, Groton, and James N. Crum, Stonington, both of Conn., assignors to Harris Intertype Corporation, Cleveland, Ohio

Filed Aug. 16, 1972, Ser. No. 281,103
Int. Cl. B41f *31/14*
U.S. Cl. 101—349 **18 Claims**



A printing press having one or more printing units has a separate motor for driving each inker cam mechanism. Each inker cam mechanism tracks the speed and phase of a selected gear driven by the main drive shaft of the press, with zero long-term position error. The speed ratio between each inker and the main drive shaft is individually controllable and the phase position of each inker with respect to the main drive shaft gear being tracked is also individually controllable.

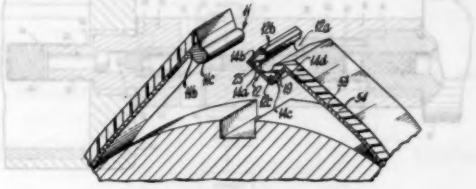
A primary tracking signal is derived from a tachometer on the main drive shaft of the press, and angular position errors are corrected by a feedback circuit. Error signals are generated by counting the pulses of an oscillator which occur between the time that the main drive gear reaches a predetermined angular position and the time that an inker cam mechanism reaches a predetermined angular position. The frequency of the oscillator whose pulses are being counted is made proportional to the square of press speed in order to make the error signal a constant percentage of a primary tracking signal.

3,765,329

CYLINDER COVER FASTENING DEVICES

Alan D. Kirkpatrick, 5 Warren Place, R. D. No. 4, Newfoundland, and Ronald T. Warll, Butler, 334 High Crest Drive, both of N.J.

Filed Sept. 28, 1971, Ser. No. 184,348
Int. Cl. B41f *29/04*; B26d *7/20*
U.S. Cl. 101—415.1 **3 Claims**



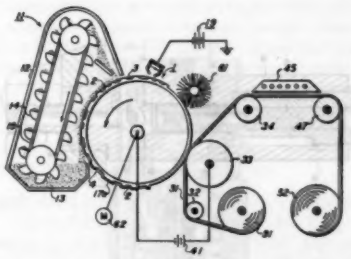
A positive locking releasable fastening device is provided which is particularly well adapted for use in installing a blanket on a cylinder without leaving a void where the ends of the blanket meet. The device features a two-part, "snap-in" construction comprising self-holding interfitting male and female parts. Each part is provided with means for attachment to the opposite ends of a split ring annular member.

3,765,330

XEROPRINTING EMPLOYING LETTERPRESS SURFACE COVERED WITH A LAYER OF RESISTIVE MATERIAL

Robert W. Gundlach, Perinton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 6, 1971, Ser. No. 104,334
Int. Cl. B41f *5/04*, *13/02*
U.S. Cl. 101—426 **10 Claims**



Upon placing an insulating layer into intimate molecular contact with the raised surfaces of a conductive substrate it has been determined that selective discharging will occur when the resulting configuration is exposed to a uniform electrostatic charge such that an electrostatic latent image is produced on the composite member. The system is suitable for forming and developing images in either the charge retaining or discharged areas of the electrically resistive film.

3,765,331

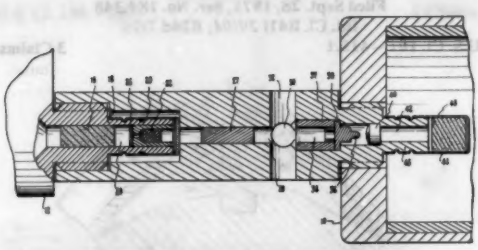
WATER-ARMED AIR SAFETIED DETONATOR

Louis J. Montesi, Colesville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 11, 1972, Ser. No. 242,990
Int. Cl. F42b *27/08*; F42c *15/02*
U.S. Cl. 102—16 **3 Claims**

A water-armed, air-safe fuze for hand grenades, bombs, mines and torpedoes which permits initiation of the main charge only when the device is underwater. A floodable chamber having flooding holes open to the environment is intermediate an explosively driven piston and a percussion

primer. When water fills the floodable chamber, sufficient forces will be transmitted from the driver piston to an intermediate firing pin which will be ejected toward the percussion



primer to initiate the main charge in the ordnance. When air fills the chamber, insufficient forces will be transmitted and the device will be safetied.

3,765,332

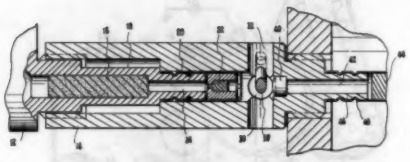
WATER-ARMED, AIR-SAFETIED DETONATOR

Kenneth L. Baker, College Park; Arthur G. Shipley, Bowie; Richard D. Plenge, Ellicott City, and Henry Anderson, Jr., Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,600

Int. Cl. F42c *15/10*

U.S. Cl. 102—16 **4 Claims**



A water-armed, air-safetied fuze for hand grenades, bombs, mines, and torpedoes which permits initiation of the main charge only when the device is underwater. A floodable chamber, having flooding holes to the environment is intermediate an initiator charge, including a delay charge and a transfer charge, and a percussion primer. When water fills the floodable chamber, sufficient forces will be transmitted from the transfer charge to an intermediate firing pin or directly to a percussion primer to initiate the main charge in the ordnance. When air fills the chamber insufficient forces will be transmitted and the device will be safetied.

3,765,333

SUBSEA CABLE CUTTER AND THE METHOD OF ITS USE

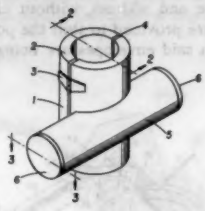
William Carroll Reed, and Kenneth Bratton Livingston, both of Arlington, Tex., assignors to Jet Research Center, Inc., Arlington, Tex.

Filed June 14, 1971, Ser. No. 152,832

Int. Cl. F42b *3/08*

U.S. Cl. 102—24 HC **17 Claims**

The present invention relates to an apparatus for severing cable or line at a preselected time and more particularly to a



cutter employing a shaped charge for severing mooring cable or line beneath the surface of the water.

3,765,334

CONDUCTIVE IGNITER COMPOSITION

Albert Ward Rentz; Chesley Clark, both of China Lake; James P. Diebold, Ridgecrest, all of Calif., and Judson B. Eldridge, Phoenix, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 20, 1971, Ser. No. 210,276

Int. Cl. C06d *5/06*

U.S. Cl. 102—27 R **3 Claims**

A conductive igniter strand comprising a mixture of Viton, Teflon, magnesium and graphite which reduces the dangers from electrostatic discharge and at the same time provides adequate ignition.

3,765,335

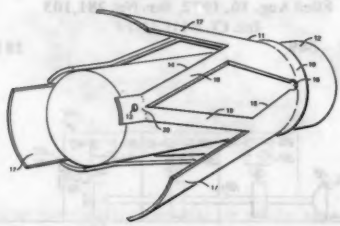
TARGET DISCRIMINATING DEVICE

James E. Blair, and Orville J. Saholt, both of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 21, 1972, Ser. No. 246,345

Int. Cl. F42b *13/00*

U.S. Cl. 102—62 **4 Claims**



A target discriminating device which is attached to the forward end of a projectile such as a bomblet and which spreads to keep the projectile from sinking too deeply if the projectile strikes a soft target such as soft earth but which is wiped off of the projectile if the projectile strikes a hard target.

3,765,336

CHAFF BULLET

Robert J. Kulsik, Livermore, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

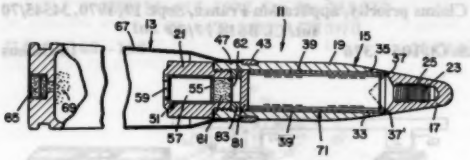
Filed Jan. 28, 1972, Ser. No. 221,498

Int. Cl. F42b *13/56*

U.S. Cl. 102—63 **6 Claims**

A chaff bullet having a nose piece, a body and a rear section. The body encloses a chaff element which comprises a pair of half shells, each tapered at one end, and a plurality of chaff packettes positioned within the half shells. Each chaff packette includes several thousand elongated chaff which are enclosed by a thin wrapping of Mylar. When the chaff bullet is

fired from a gun the tracer powder contained in the rear section burns slowly. After a predetermined time the increasing heat from the burning tracer powder causes ignition of an explosive in the body section which forces out the chaff element.



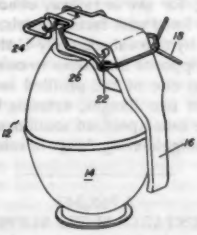
The spin of the bullet causes outward release of the half shells and the chaff packettes. When the chaff packettes enter the air stream the Mylar wrapping is unwrapped which releases the chaff into the air in a well dispersed and undamaged condition.

3,765,337

HAND GRENADE SAFETY LOCK PULL RING ASSEMBLY

William V. Padula, Cranford, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1972, Ser. No. 229,370
Int. Cl. F42b *27/00*
U.S. Cl. 102—64 **2 Claims**



The present invention relates to a safety release device for explosive bombs or hand grenades. The safety device permits the munition to be safely handled and securely held in an inoperative condition. The invention has reference to and proposes means whereby the cotter pin can be locked in a safe condition which can be released and removed by the thrower when desired. The device may be actuated to bring the mechanism into a set position, whereby the device may thereafter be instantaneously caused to become operative.

The invention described herein may be manufactured, used and licensed by or for the Government for governmental purposes without the payment to me of any royalty thereon.

3,765,338

NONLINEAR INDUCTOR PROXIMITY FUZE

Pio H. Dalle Mura, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1955, Ser. No. 547,873
Int. Cl. F42c *13/06*, *13/00*
U.S. Cl. 102—70.2 P **5 Claims**

1. An apparatus for exploding a projectile in proximity to a target, comprising, an oscillator for generating an electromagnetic wave, an antenna coupled to said oscillator for radiating said generated wave and for receiving a target reflected portion of said wave, a detector connected to said oscillator for developing a beat frequency output signal proportional to the frequency variation between the generated and reflected waves, an audio amplifier connected to said detector for amplifying said output signal, amplifier means including a nonlinear frequency responsive resonant network for selectively developing a control signal having an abrupt substantial amplitude variation in response to an amplified output signal of a

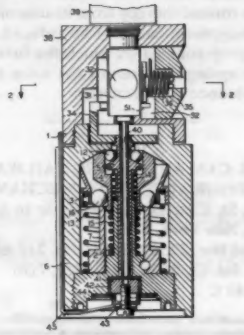
preselected frequency and firing means connected to said amplifier means for utilizing said control signal to explode said projectile.

3,765,339

PERCUSSION FUZE FOR ROCKETS

Giovanni De Angelis, Rome, and Ettore Marchiaro, Colleferro, both of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa Societa per Azioni, Milan, Italy

Division of Ser. No. 2,558, Jan. 13, 1970, abandoned. This application Jan. 19, 1972, Ser. No. 218,864
Claims priority, application Italy, Feb. 3, 1969, 34686 A/69
Int. Cl. F42c *15/24*
U.S. Cl. 102—78 **1 Claim**

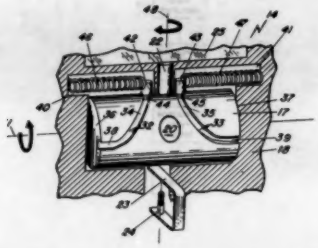


A percussion fuze for rockets having an impact sensitive assembly with a spring loaded electrical contact. An explosive train has a rotor, a primer in the rotor and a detonator. A first safety inertia device has a cylindrical housing and a first spiral spring arranged in the housing. A ring abuts the first spring and a plurality of first spheres are arranged circumferentially within the ring. A second safety inertia device has a second spiral spring and a cup abutting the second spring. A plurality of second spheres are arranged circumferentially within the cup. A third safety inertia device has an electrical contact guide tube axially displaceable within the cup towards the rocket tip having an annular projection with an inclined surface. A third spiral spring acts on the contact guide tube. The guide tube is retained in the inoperative position by the second spheres arranged between the inclined surface and the inner upper surface of the housing.

3,765,340
ARMING AND UNARMING DEVICE

Jack Brothers, Succasunna, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 19, 1972, Ser. No. 245,335
Int. Cl. F42c 15/22
U.S. Cl. 102—79 8 Claims

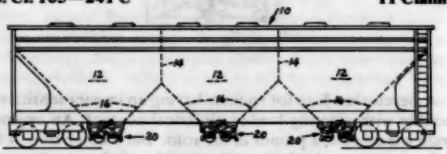


A spin actuated arming and unarming fuze mechanism for a spin stabilized projectile which includes a cylindrical rotor that carries an electrically activated detonator having a contact extending outwardly of the rotor in the path of a stationary fixed switch contact. The rotor is supported within a housing that also has disposed therein a lead cup explosive assembly and positioned such that when the rotor is in one of its terminal positions (armed) the detonator contact is electrically connected to the switch contact and the opposite end of the detonator is in alignment with the lead cup assembly to provide an explosive train in conjunction with a booster explosive. The rotor housing inner wall is formed with an opposed pair of channels in each of which are disposed a spring and a cam follower free to slide therein against the spring bias force. The follower is provided with an extending rider which cams within a cam follower channel groove within the outer surface of the rotor so that as each cam follower traverses its channel the rotor will be rotated thereby from its unarmed to its armed position. This movement can only be induced by spin forces exerted on the projectile within which the fuze mechanism is carried and the springs will return the rotor to its unarmed position in the absence of spin energy.

3,765,341
SEQUENTIAL CAM AUTOMATIC RAILWAY HOOPER CAR DOOR ACTUATING MECHANISM

Harold T. Ried, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,685
Int. Cl. B61d 7/18, 7/26, 7/30
U.S. Cl. 105—241 C 11 Claims

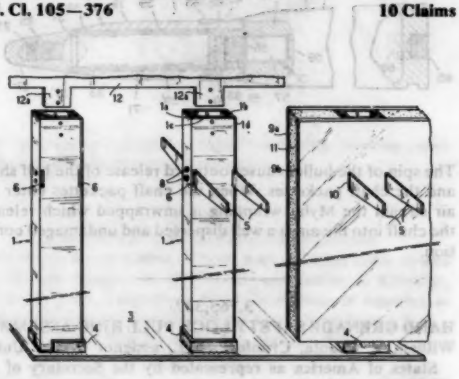


Railway hopper car quick dump pivoted bottom doors are opened and closed automatically by camming actuators positioned along the track. Horizontal rods extending from opposite sides of the car are moved upwardly by a pair of the actuators to unlock an overcenter toggle linkage at one side of the car and move a similar toggle linkage on the other side of the car past dead center to permit the doors to open. As the car moves along, the bottom of the doors engage inclined members between the tracks for closing the doors, and trackside camming actuators move the linkages to their overcenter position and latch them in this position.

3,765,342
PARTITIONS

Maurice Fau, 32 avenue Raymond-Poincare, La Varenne St-Hilaire, France

Filed Sept. 15, 1971, Ser. No. 180,707
Claims priority, application France, Sept. 17, 1970, 34545/70
Int. Cl. B61d 17/00
U.S. Cl. 105—376 10 Claims

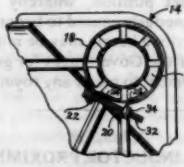


A partition, e.g. for use in railway coaches, in which supporting pillers are lined with facing panels, each of the pillers being constituted by two substantially U-shaped profiled sections disposed in opposite directions to one another. The web portion of at least one of the profiled sections, which web brings together its two flanges, extends beyond the flange located inside the other profiled section and does duty as a stop vis-a-vis the neighbouring flange of said profiled section.

3,765,343
ADJUSTABLE SHELF SUPPORTS

Ralph Ettlinger, Jr., Highland Park, and Fred P. Strobl, Jr., Park Ridge, both of Ill., assignors to Raburn Products, Inc., Wheeling, Ill.

Filed Apr. 25, 1972, Ser. No. 247,297
Int. Cl. A47b 9/08
U.S. Cl. 108—106 6 Claims



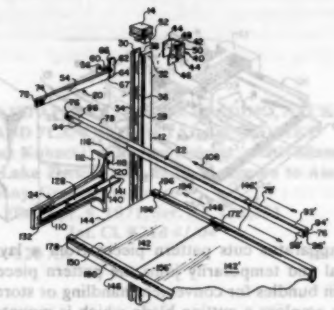
A shelf construction and means for attaching the construction to supporting legs. The attaching means comprises a band and an adjusting means for increasing and decreasing the size of the opening defined by the band, a shelf is provided with openings for receiving supporting legs and a plurality of spaced apart engaging fingers are associated with these openings. The attaching bands are adapted to be positioned around these fingers and by adjusting the openings defined by each band, the fingers are engaged and pressed against the supporting legs whereby the shelf will be secured at a desired level with respect to the legs.

3,765,344

TELESCOPING SHELF ASSEMBLY

Irwin J. Ferdinand, Glencoe, and Irwin R. Kulbersh, Morton Grove, both of Ill., assignors to The Hirsh Company, Skokie, Ill.

Filed May 15, 1972, Ser. No. 253,317
Int. Cl. A47b 9/00; A47f 5/10
U.S. Cl. 108—108 20 Claims



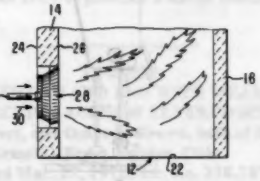
A lightweight, sturdy, shelving assembly is disclosed, having telescoping metal shelf and guard rail units which snap fit between (right and left) end brackets, provided with hook ends at their bases to engage spaced upright slotted rails. The lateral span of the shelving assembly is adjustable to fit the desired space. The vertical spacing between the shelves and their guard rails is adjustable after installation to accommodate different sizes of articles. The shelf units are identical pairs having slotted box flanges, one larger than the other, which telescope together with the larger flange receiving the smaller flange of each as the planar surfaces overlap. Each have rolled front and rear box flanges and are identical. The guard rail units are identical pairs formed as rolled poly-sided beams. Each beam has an open-ended slot along one corner whereby two such units, oriented 180° from each other along their longitudinal axes, receive on another in telescoping relationship, with the slot of each receiving a continuous wall of the other. The distal ends of the guard rail brackets have tabs snap-engaging the open extended ends of the guard units. The shelf brackets are provided with a supporting inner flange having distal tabs engaging appropriate openings in the inside walls of the ends of the box flanges of the shelf units.

3,765,345

COMBUSTION CHAMBER BURNER THROAT CONSTRUCTION

Chester S. Binasik, Palo Alto; Daniel H. Hudson, San Lorenzo, and Temple S. Voorheis, Atherton, all of Calif., assignors to Coen Company, Burlingame, Calif.

Continuation-in-part of Ser. No. 1,653, Jan. 9, 1970, Pat. No. 3,641,951. This application Jan. 7, 1972, Ser. No. 216,201
Int. Cl. F23m 5/02
U.S. Cl. 110—1 A 10 Claims



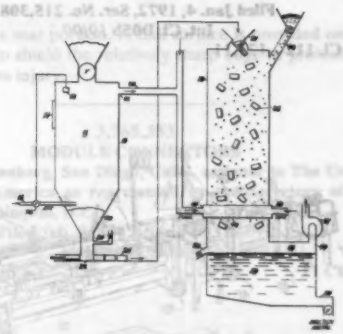
A burner throat that is shaped in accordance with the shape of the combustion chamber in which the throat is installed to afford flame shaping so that the flame is distributed throughout the combustion chamber. A burner throat formed of a plurality of individual segmental bricks, the totality of which define the throat shape. Each brick is shaped in respect to its position in the throat to direct the flame appropriately within the combustion chamber. A burner throat formed at the site of installation with a plurality of appropriately shaped segmental bricks.

3,765,346

ASH PROCESSING SYSTEM

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company Inc., Wellsville, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,474
Int. Cl. F23g 5/12
U.S. Cl. 110—8 R 5 Claims



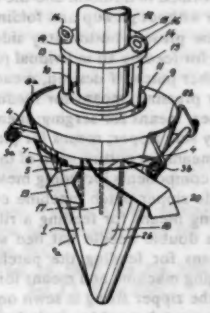
A pyrolytic system for the conversion of waste material into its basic components. In this system ash resulting from the pyrolysis of organic waste material together with glass bottles, metal cans, foil and other non-combustible residue is compressed and baled before being introduced into a high temperature "slagging" chamber. In the "slagging" chamber the baled refuse is subjected to heat sufficient to reduce it into a molten slag and its molten metallic components, while the gaseous products of combustion are directed downward and over the surface of the hot molten residue to effect complete oxidation of their combustible components.

3,765,347

PLANTING DEVICE

Ingvar Tormstrom, Ockelbo, Sweden, assignor to Kopparfors AB, Ockelbo, Sweden

Filed Feb. 7, 1972, Ser. No. 224,101
Int. Cl. A01c 11/00
U.S. Cl. 111—4 6 Claims



A planting device comprises a hollow conical member, which consists of at least two segments, being pivotally con-

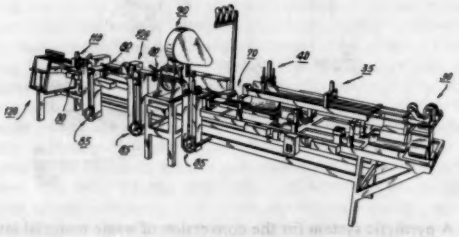
nected to a rotatably arranged holder having a guide for the plant. The segments may be locked in a first position in which relative narrow longitudinally extending openings are generated between the segments which are so shaped that mould will be pressed into the conical member through said openings when the holder is rotated. After planting the locking is released thereby admitting the segments to be automatically swung outwardly when the device is lifted up.

3,765,348

ZIPPER PATCH SEWING AND FORMING MACHINE

Tony Jabor, and Amador F. Holguin, both of El Paso, Tex., assignors to Farah Manufacturing Company, Inc., El Paso, Tex.

Filed Jan. 4, 1972, Ser. No. 215,308
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 **33 Claims**



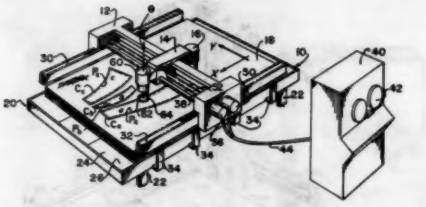
Machines have been disclosed for forming a button stay side zipper patch and a fly side zipper patch as garment components for later incorporation into garments such as men's pants; the button stay side machine consists of a combination of elements which takes separate pieces of zipper patch fed either invertingly or directly to a folding device where the patch is folded and pressed, thereafter joined with a zipper string, and in a serging sewing machine the zipper is sewn to the patch; in a zipper "gapper" device a certain number of zipper teeth are removed from the zipper string and, after a "top stop" placed on the zipper section string for the button stay side patch, the continuous and chained-together button stay side patch is placed in a cutting device where each individual button stay side zipper patch is cut from the others and thereafter stacked; another embodiment of the button stay side zipper patch machine is provided whereby individual patches are preformed in a ribbon and the ribbon is fed to the serging machine without pickup and folding of the individual patches; thus, the present button stay side machine is comprised of means for feeding an individual patch; means for inverting every other patch, if desired, means for folding each patch,means for pressing; means for feeding and sensing the feed of the zipper; means for serging; means for gapping the sewn button stay side zipper; means for placing a top stop on the zipper; and means for cutting each of the individual button stay side zipper components including means for stacking the same; the fly side zipper patch machine comprises a serging machine including means for feeding a ribbon of patches to the same, and a double needle flat bed sewing machine including the means for feeding the patches through it and through the serging machine and means for feeding the zipper string whereby the zipper string is sewn on the patch; further the fly side zipper patch machine includes the gapper means, but not the top stop means, and the cutting and stacking means.

3,765,349

APPARATUS FOR FORMING BUNDLES OF SHEET MATERIAL

Heinz Joseph Gerber, West Hartford, Conn., assignor to Gerber Garment Technology, East Hartford, Conn.

Filed May 6, 1971, Ser. No. 140,798
Int. Cl. D05b *3/00, 21/00*
U.S. Cl. 112—121.14 **7 Claims**



An apparatus cuts pattern pieces from a layup of sheet material and temporarily joins the pattern pieces of similar shape in bundles for convenient handling or storage. The apparatus employs a cutting blade which is mounted on a two axis carriage mechanism and translated through a layup of sheet material spread on a support table having a penetrable bed so that a stack of pattern pieces having the same shape are cut from the layup. The two axis carriage mechanism is numerically controlled so that the blade follows a programmed cutting path which defines the periphery of the pattern pieces to be cut from the sheet material. A binding mechanism which inserts a binding material through the sheet material to hold the stacked pattern pieces in a bundle is also mounted to the two axis carriage mechanism to move the binding mechanism over the layup between spaced stations within the periphery of the cutting path where the binding material is to be inserted. The binding mechanism may take the form of a stitching mechanism having a needle which generates non-locking stitches in the pattern pieces by reciprocating through the layup of sheet material and into the penetrable bed at spaced stations. In another form, the binding mechanism may include a stapler which projects staples through the layup of sheet material and partly into the penetrable bed at the spaced stations. Both the stitching and stapling operations can be performed before or after the pattern pieces are cut from the layup sheet material and, after either operation, the pattern pieces may be striped or removed singly from the temporary bundle or the entire bundle may be broken apart by removing the binding material.

3,765,350

SEWING MACHINE CONVERSION ASSEMBLY

Charles Sztari, 513 Atlantic St., Bethlehem, Pa.

Filed Nov. 23, 1970, Ser. No. 91,980
Int. Cl. D05b *37/00*
U.S. Cl. 112—122 **5 Claims**

Apparatus for converting an ordinary sewing machine into a machine that will cut fabric. The apparatus comprises a cutter

that is inserted into the sewing machine needle holder, a presser foot, a throat plate containing a recess adapted to permit the cutter to pass through and retaining means surrounding the recess.

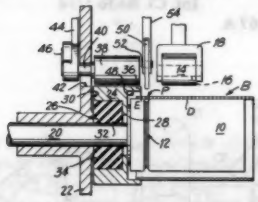
Two types of cutters each with a different blade design can be inserted into the needle holder, one cutter is capable of making a continuous straight cut and the other cutter is capable of making a continuous pinking cut.

3,765,351

METHOD AND APPARATUS FOR BEADING, NECKING-IN AND FLANGING METAL CAN BODIES

Edward Frank Kubacki, Arlington Heights, and William Dean Timmins, Lake Zurich, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Apr. 9, 1971, Ser. No. 132,681
Int. Cl. B21d *41/04*
U.S. Cl. 113—120 AA **16 Claims**



A method and apparatus for reducing the circumference of a portion of a metal can body to form a necked-in (and/or beaded) feature and for producing a flange feature on one side of the can body portion wherein the can body is rotated by a mandrel about its own axis which is offset from the mandrel axis, both sides of the can body portion are restrained from undergoing movement relative to the mandrel by bringing clamping pressure to bear against said both sides by means of rotatable clamping rolls, the can body portion, being circumferentially aligned with a circumferentially undercut section of the mandrel, is reduced in circumference by moving a rotatable beading roll inwardly toward the axis of the mandrel and against the can body portion, after a predetermined initial reduction in the circumference of the can body portion, the side of the can body on which the flange feature is to be produced is freed from its restraint by removing the clamping pressure imposed by its respective clamping roll, and, finally, as the can body portion is further reduced in circumference by continuing the movement of the rotatable beading roll inwardly against the can body portion, the free, unrestrained side of the can body portion is drawn between predetermined radiused surfaces on the mandrel and the beading roll which causes the marginal edge of that side of the can body portion to pivot and swing outwardly beyond the original circumference of the can body to produce a flange feature on the end of the can body.

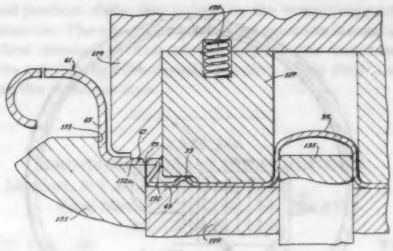
3,765,352

COMBINED CAN AND END WITH MEANS FOR PROTECTING AGAINST SEVERED SCORE

James R. Schubert, and Omar L. Brown, both of Dayton, Ohio, assignors to Ermal C. Fraze, Dayton, Ohio

Filed Mar. 27, 1972, Ser. No. 238,187
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 C **11 Claims**

An easy opening container wall comprising a container wall of sheet material having a line of weakness therein defining a tear portion at least partially removable from the container wall. Removal of the tear portion provides a relatively sharp edge along the tear portion. A dull surface is provided on the tear portion to shield the relatively sharp edge to protect the consumer from injury.

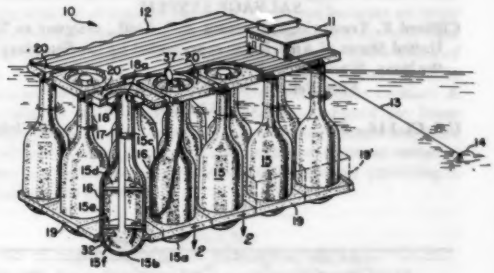


3,765,353

MODULE CONNECTORS

Edgar N. Rosenberg, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 2, 1973, Ser. No. 329,010
Int. Cl. B63b *35/00*
U.S. Cl. 114—0.5 T **11 Claims**



An improved method of joining elongate bottle members into a floatation structure is disclosed. A plurality of the elongate bottle members are joined together at a point beneath the water line of the body of water in which they are floating. This joint is accomplished by dewatering a volume between adjacent, specially-configured sections on the lower end of the elongate bottle members and filling the dewatered joint with a mixture of plastic concrete. After the concrete is cured, the joint is placed in a compressional loading to insure a rigid and mechanically stable union. If desired, a passageway may be structured between adjacent, elongate bottle members so as to provide a passageway therebetween.

3,765,354

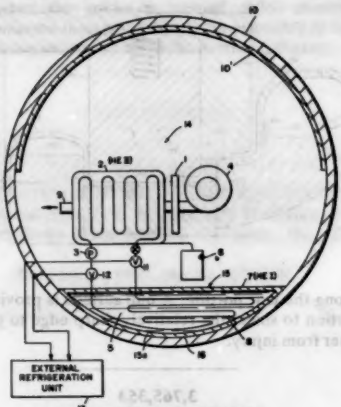
LIFE SUPPORT SYSTEM WITH A HULL HEAT EXCHANGER

Charles M. Gronroos, Vallejo, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1972, Ser. No. 300,000
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R **7 Claims**

A life support system with a heat exchanger cooling system comprising a heat exchanger located below a false floor in the cabin of the life support system and a heat exchanger located

in the crew compartment. The heat exchanger cooling system further comprises a cabin heat exchanger with a bypass hull



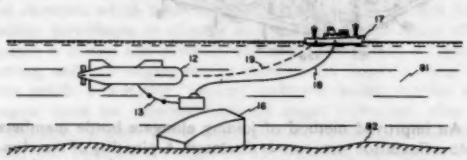
heat exchanger. A circulation system is provided for the three heat exchangers. Heat for the vehicle is provided by the electrical components and a supplementary heater if required.

3,765,355

SALVAGE SYSTEM

Clifford F. Trowbridge, Pleasant Hill, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 4, 1972, Ser. No. 223,431
Int. Cl. B63c *7/00*
U.S. Cl. 114—51 **15 Claims**



A marine salvage system is disclosed as including a carrier vehicle having a controllable manipulator arm to which is attached a carriage frame for carrying a plurality of unique self-striking, self-aligning welding electrode assemblies that facilitate the welding thereof to sunken underwater objects to be salvaged, so that they may be raised to the surface and transported to any desired place.

3,765,356

HYDROFOIL WATERCRAFT STEERING AND STABILIZING MECHANISM

Kenneth Edwin Cook, 80 Walnut Ave., Red Bank, N.J.

Filed Mar. 2, 1972, Ser. No. 231,101
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 H **5 Claims**

A mechanism for steering and stabilizing hydrofoil watercraft comprising mounting submerged foils under the stern in a plane parallel to the fore and aft lines of the craft and pivoted on an axis lying in a plane perpendicular to those fore and aft lines. When these submerged foils are then provided with a means for independently turning them from inside the

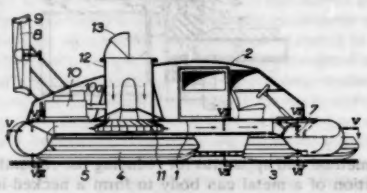
craft, they form an effective method of turning the craft with reduced side slippage, especially if they are extended outboard of the craft.

3,765,357

ALL-TERRAIN-VEHICLE

Erkki Peri, Hamina, Finland

Filed Oct. 22, 1971, Ser. No. 191,721
Claims priority, application Finland, Oct. 22, 1970, 2845/70
Int. Cl. B63b *1/34*
U.S. Cl. 114—67 A **11 Claims**



A vehicle adapted to travel on both water and ice comprises: a vehicle hull; propulsion means carried by said hull; ski-like surfaces carried by said hull and mounted to permit their up-and-down movement relative to said hull; support means acting between said ski-like surfaces and said hull and arranged to provide at all times a substantial degree of support of the hull by the ski-like surfaces; fan means arranged to discharge air continuously into a space below said hull; and enclosure means arranged to restrict leakage of said air from below said hull; the arrangement being such that said air in said space below said hull can provide a considerable degree of support for said hull by an air cushion or ground effect, while permitting said ski-like surfaces to remain in contact with the ground and so provide both support and restraint against lateral movement of the hull relative to the ground.

3,765,358

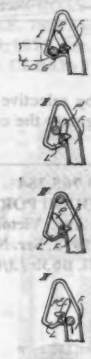
AUTOMATIC ACTING MECHANISM FOR CONTROL OF STOWABLE 'TWEEN DECKS

Torvald Eide, Notteroy, Norway, assignor to Kaldnes Mek, Verksted A/S, Tonsberg, Norway

Filed Nov. 8, 1971, Ser. No. 196,613
Claims priority, application Norway, Nov. 6, 1970, 4252/70
Int. Cl. B63b *25/00*
U.S. Cl. 114—72 **2 Claims**

An improved arrangement for holding a stowable 'tween deck in service position. The 'tween deck is moveable between a substantially vertical stored position and a substantially horizontal service position. A guide path is provided at the side of the ship for guiding the 'tween deck for motion between its stored and service positions. The 'tween deck includes a trunnion member extending outwardly into the guide path from that portion of the 'tween deck which is lowermost

when the 'tween deck is in its stored position. The improved holding arrangement according to the invention is located at the upper end of the guide path and includes a pocket formed by an enlargement of the guide path at the upper end thereof, a pawl member positioned between the pocket and the guide path. The pawl member pivotally mounted for motion between a first position blocking the pocket to guide the trunnion member in the guide path, and a second position blocking the guide path to guide the trunnion member from the top of the guide path into the pocket. A readjustment arm is coaxially mounted with the pawl member for pivotal movement in position between the pocket and the guide path



between a first position in which a portion of the arm extends into the guide path and in which the arm is undisturbed by motion of the trunnion from the upper portion of the guide path to the pocket and a second position in which a portion of the arm extends into the pocket and in which the arm is undistrubed by motion of the trunnion in the guide path. The arrangement also includes means for releasably securing the readjustment arm in the first and second positions, and spring means connected to the readjustment arm and the pawl member for biassing the pawl member to its first position when the arm is in the first position and for biassing the pawl member to the second poisition when the arm is in the second position.

3,765,359

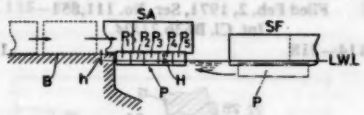
APPARATUS AND METHOD OF CONSTRUCTING MARINE FLOAT STRUCTURES

Isoe Takezawa; Masataro Muto, and Koichi Hori, all of Nagasaki City, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 40,520, May 26, 1970,. This application July 6, 1972, Ser. No. 269,318

Int. Cl. B63b *3/02*

U.S. Cl. 114—77 A **3 Claims**



Apparatus and a method of constructing a marine float structure, such as a large-sized ship structure, is accomplished by assembling a number of divided ship portions on a ship building base. The first divided portion is transported on the water surface by means of a composite pontoon which is so constructed that each individual portion thereof can be separated from the other up and down or forwardly and backwardly. Then the composite pontoon is caused to sink down in the water so that said first divided portion of the ship can float of its own accord on the water surface. Subsequently the second divided portion of the ship is transported on the water surface using the same pontoon as mentioned above. A part of the composite pontoon is separated from the remaining body and allowed to sink down in the water while said second divided portion of the ship is held by the remaining portion of the pontoon. The separated part of the pontoon is used to float said first divided portion of the ship on the water surface, thereby combining both divided portions of the ship in a single unit on the water surface.

3,765,360

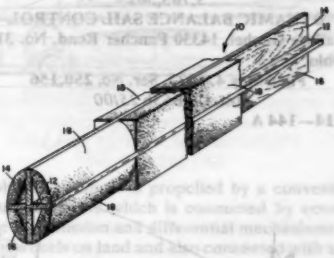
REINFORCED MAST CONSTRUCTION

Platt Monfort, R.F.D. 2, Wiscasset, Maine

Filed Mar. 31, 1972, Ser. No. 240,878

Int. Cl. B63b *15/00*

U.S. Cl. 114—90 **7 Claims**



Mast construction for sailboat spars, flagpoles and the like, and a method of making the same. The mast includes an inner wood core generally cruciform in shape, and low density, rigid thermoplastic foam material positioned in the open areas of the core, with the exposed surface of the thermoplastic material being shaped to provide the desired mast contour. A plurality of reinforcing wires are secured around the foam material, and a resinous material is trowelled around the foam material and the cruciform core, with the resinous material when set imbedding the reinforcing wires and providing a smooth outer contour.

3,765,361

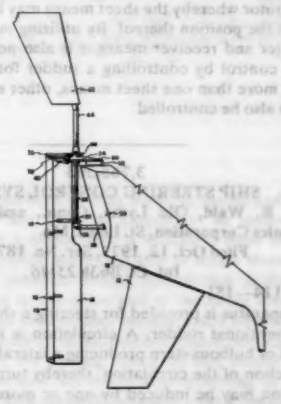
MARINE CRAFT STEERING MEANS

Roland S. Saye, 1512 Priscilla Ln., Newport Beach, Calif.

Filed Nov. 25, 1970, Ser. No. 92,597

Int. Cl. B63h *25/06*

U.S. Cl. 114—144 C **6 Claims**



Self steering systems for marine craft are described which comprise wind direction sensing and course setting means,

servo rudder means operatively connected to a rudder and connecting means linking the servo rubber means to the wind sensing and course setting means. In one embodiment, a supplemental rudder is removably attached to a craft with a servo blade which can be coupled to the wind sensing means by linking means that provides proportional control. In another embodiment, a pendulum servo blade is linked to a craft's rudder with bracket means that provides a sliding and rotatable connection which does not impose any weight on the craft's rudder. An alternative embodiment employs a modified spade rudder with a servo rudder and an integral servo mechanism. All of the embodiments are preferably provided with linking means to the wind sensing and course setting means which permit adjustability of the response of the system. The preferred wind sensing and course setting mechanisms that can be used with these systems employs vernier means to permit a fine degree of control of the craft's direction.

3,765,362

DYNAMIC BALANCE SAIL CONTROL

James Wallace Gitchel, 14330 Fancher Road, No. 31, Westerville, Ohio

Filed May 4, 1972, Ser. No. 250,156
Int. Cl. B63h *25/00*
U.S. Cl. 114—144 A 8 Claims

A dynamic balance sail control apparatus for sailboats or the like which controls the position of a mainsail about a vertical axis. Control of the mainsail may be effected on board the craft or from a remote position with the aid of radio transmitter and receiver means. One end of a sheet or rope means is attached to the boom of the mainsail and the other end is wrapped around a reel means from which the sheet means is payed in and out. A reversible motor means is used to rotate the reel means in opposite directions. The apparent wind against the mainsail creates a tension on the sheet means which is absorbed by a preadjusted tension on a rubber band torque motor whereby the sheet means may be payed in or out to adjust the position thereof. By utilizing multichannel radio transmitter and receiver means it is also possible to effect a steering control by controlling a rudder for the sailboat. By utilizing more than one sheet means, other sails, such as a jib sail, may also be controlled.

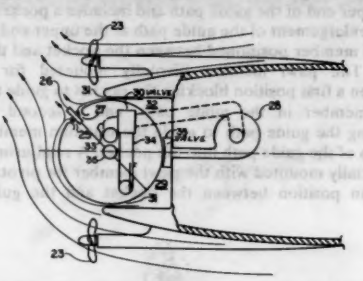
3,765,363

SHIP STEERING CONTROL SYSTEM

Quentin R. Wald, Old Lyme, Conn., assignor to General Dynamics Corporation, St. Louis, Mo.

Filed Oct. 12, 1971, Ser. No. 187,958
Int. Cl. B63h *25/46*
U.S. Cl. 114—151 6 Claims

An apparatus is provided for steering a ship which replaces the conventional rudder. A circulation is induced around a rounded or bulbous stern producing a lateral force opposite to the direction of the circulation, thereby turning the ship. The circulation may be induced by one or more of the following devices (a) unequal augmentation of the momentum of the boundary layer on the two sides of the ship by water jets flowing from backward facing slots, (b) by the use of a narrow movable vane which fixes the location of the stagnation line on the rounded stern, and (c) by suction slots close to a fixed or movable vane which, by selective suction on one or the other side of the vane, augment the circulation for any given location of the vane.

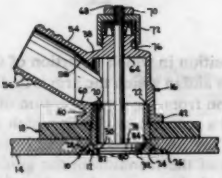


3,765,364

FLUSH-THROUGH PORT DEVICE

John Booth, 114 Wildwood Ave., Victoria, B.C., Canada

Filed July 26, 1972, Ser. No. 275,289
Int. Cl. B63b *13/02*
U.S. Cl. 114—198 11 Claims



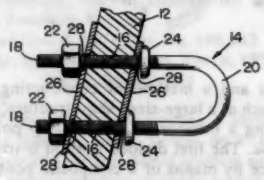
A flush-through port device including a fitting having a flared head to be flushly received in a counter-sunk hole in the hull of a boat, a housing having a hollow body screwed onto the fitting to clamp the hull and a tubular coupling member extending from the body at an angle from its central axis, a valve including an interior valve seat formed in the fitting and a valve member carried by a valve stem slidable extending through the body of the housing, a locking cap to be screwed to the housing to lock the valve member in a closed position in sealing engagement with the valve seat, and a sealing member frictionally engaging the valve stem to lock the valve member in an open position out of the path of fluid through the housing.

3,765,365

BOW-EYE OR LIFTING-EYE, ESPECIALLY FOR MOUNTING ON A BOAT

Herman L. Gillespie, 2415 Dellwood Drive, Fort Wayne, Ind.

Filed Feb. 2, 1971, Ser. No. 111,851
Int. Cl. B63b *21/04*
U.S. Cl. 114—218 1 Claim



The specification discloses a bow-eye or lifting-eye structure, especially for mounting on a boat, such as at the bow or

on the transom at the stern of the boat and wherein the eye structure comprises a U-bolt having the legs threaded with two nuts on the legs between which a wall of the boat is received when the eye is mounted thereon and, preferably, with load distributing plates interposed between the nuts and the wall of the boat.

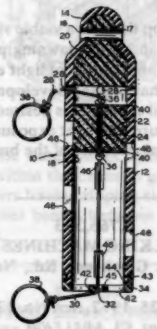
A particular feature of the present invention is to be found in the construction of the U-bolt so as to be substantially one and the same diameter from end to end whereby reduced diameter sections that can form break off regions when the bolt is stressed are eliminated.

3,765,366

FLOATING BOAT FENDER

Robert Connelly, 3158 N.E. 78th Ave., Portland, Oreg.

Filed Feb. 9, 1972, Ser. No. 224,826
Int. Cl. B63b *59/02*
U.S. Cl. 114—219 **4 Claims**



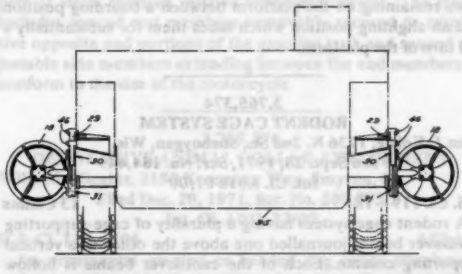
A hollow tubular boat fender of rubber or the like has one end reduced in diameter and provided with a hole for attaching a cord. A buoyant structure is positioned in such end of the fender. Holes extend through the wall of the fender between the buoyant structure and the other end of the fender as well as an opening in such other end so that any space in the fender rapidly fills with water when the fender is placed in water. The fender floats in an upright position with its cord attaching end above the surface of the water. A portion of the buoyant structure can be movable to a position adjacent such other end of the fender by cords or a flexible rod extending to the exterior of the body portion so that the fender then floats in a horizontal position.

3,765,367

PROPULSION SYSTEMS

Ellis C. Hendrickson, Seattle, and Edward J. Rupnick, Renton, both of Wash., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 24, 1970, Ser. No. 92,470
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **3 Claims**



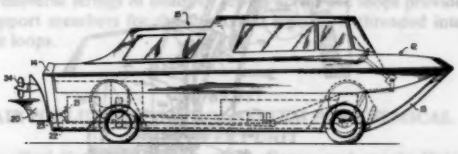
An amphibious vehicle comprising ducted-propeller units providing for an increase in water speed, a reduction in forward turning diameter, and backing turns within the vehicle length with full steering control. The water propulsion means is so arranged as to employ the same prime mover and associated power transmission and power control means that is used for land locomotion.

3,765,368

AMPHIBIOUS VEHICLE

Walter K. Asbeck, 2116 Glen Field Ter. South, Charleston, W. Va.

Filed Dec. 8, 1970, Ser. No. 96,150
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 A **20 Claims**



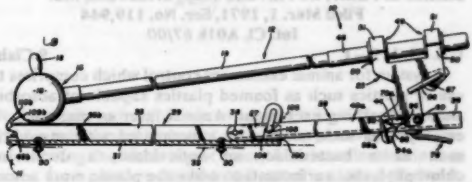
An amphibious vehicle is propelled by a conventional inboard mounted engine which is connected by conventional automobile transmission and differential mechanisms for driving a pair of wheels on land and also connected with a conventional inboard-outboard marine drive mechanism, all of the wheels being mounted on air suspension means which are pivotally connected with the hull to allow the wheels to be raised for marine use.

3,765,369

BOW MOUNT FOR TROLLING MOTORS

Andrew R. Henning, Richland, Mich., assignor to Shakespeare Company, Columbia, S.C.

Filed Apr. 17, 1972, Ser. No. 244,588
Int. Cl. B63h *21/26*
U.S. Cl. 115—17 **11 Claims**



A device for mounting a trolling motor to the bow of a boat. The device has a base member adapted to be secured to a boat. One end of a swing arm is mounted from the base member so as to permit the swing arm to rotate through approximately 180° between driving and storing positions. A bracket is attached to the other end of the swing arm for at least partial rotation with respect thereto, and a trolling motor is selectively positionable in the bracket to accommodate vertical adjustment of the trolling motor. A first means is provided selectively to lock the swing arm in driving or storing position. This first lock means is operable from a remote location by an actuating means. A second lock means is provided selectively to maintain the disposition of the bracket with respect to the swing arm.

3,765,370

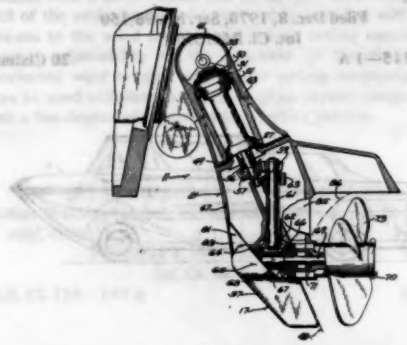
MEANS FOR BALANCING THE STEERING FORCES WHEN MOVING IN A REVERSE DIRECTION

William J. Shimanckas, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation-in-part of Ser. No. 851,211, Aug. 19, 1969, Pat. No. 3,587,510. This application Aug. 20, 1970, Ser. No. 65,399

Int. Cl. B63h 25/42

U.S. Cl. 115—35 13 Claims



Disclosed herein are several arrangements for balancing "steering torque" which occurs in a stern drive unit during reverse operation, which arrangements involve designing the lower unit so as to cause generation of a balancing torque in response to striking of the lower unit by the water swirling past the lower unit during such reverse operation. In one embodiment, the stern drive unit comprises a drive shaft housing rotatably supporting a drive shaft, together with means for swingably supporting the drive shaft housing from the stern of a boat for steering movement about an axis extending co-axially with the drive shaft, and a skeg extending rigidly downwardly from the drive shaft housing and located substantially wholly forwardly of the steering axis.

3,765,371

ANIMAL LITTER

Stanton E. Fisher, c/o P.O. Box 6825, Brentwood, Mo.

Filed Mar. 1, 1971, Ser. No. 119,944

Int. Cl. A01k 67/00

U.S. Cl. 119—1 9 Claims

A system for animal excrement control which comprises the use of plastics such as foamed plastics capable of adsorbing and/or absorbing excrement. Animal litter so made may be employed as such, or may be impregnated with an additive such as a bactericide, an antioxidant, a deodorizer, chlorophyl, etc., surfactants to make the plastic more adsorbing and/or absorbing, etc., dyes to give the desired color, etc.

The foamed plastic, preferably employed in the form of small particles, may be employed alone or in conjunction with other types of animal litter such as clays, bentonites, chlorophyl-containing litters such as dehydrated grasses, for example alfalfa, etc.

3,765,372

PROCESS AND APPARATUS FOR MARICULTURE PRODUCTION

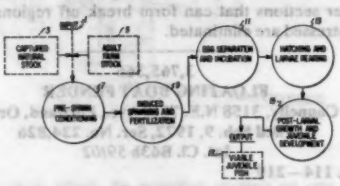
Martin A. Moe, Jr., Juno Isles, and Jay P. Dunathan, Tequesta, both of Fla., assignors to Oceanography Mariculture Industries, Inc.

Filed Nov. 29, 1971, Ser. No. 202,810

Int. Cl. A01k 61/00

U.S. Cl. 119—3 14 Claims

A mariculture process for raising salt water fishes, such as pompano, whereby a brood stock is isolated in an artifically controlled environment, the temperature and degree of light exposure and intensity are adjusted so that sexual maturity of the brood stock is rapidly attained, spawning of the brood stock and egg fertilization is artificially induced by hormone extract, the fertilized eggs are removed from the brood stock and subjected to conditions suitable for hatching, and the larvae produced from the eggs are held in a controlled environment in order to develop them to a viable size. In a second embodiment, prior to the induced spawning procedure, the conditions of temperature and degree of light exposure and intensity are adjusted so that sexual development of the brood stock is suppressed until spawning is desired and thereafter the conditions of temperature and light exposure and intensity are readjusted so that sexual maturity of the brood stock is rapidly attained.



3,765,373

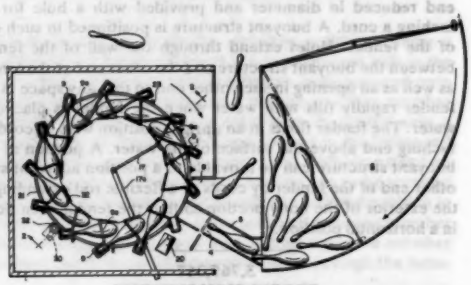
MILKING MACHINES

Francis Mark Phillips, Gembrook Rd., Nar Nar Goon, Victoria, Australia

Filed Jan. 25, 1972, Ser. No. 220,625

Int. Cl. A01j 5/00

U.S. Cl. 119—14.04 2 Claims



A milking machine installation having a rotatable annular raised platform for carrying a number of cows with provision for feeding the cows while they are being milked by a milking machine mounted on the inside of the platform controlled by an operative positioned in the center of the installation, the cows remaining on the platform between a boarding position and an alighting position which takes them for substantially a full turn of the platform.

3,765,374

RODENT CAGE SYSTEM

John J. Kolste, 1736 N. 2nd St., Sheboygan, Wis.

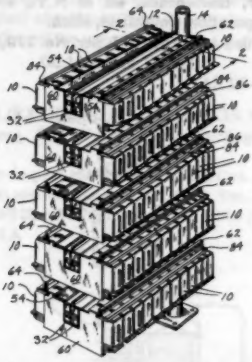
Filed Sept. 28, 1971, Ser. No. 184,449

Int. Cl. A01k 01/00

U.S. Cl. 119—18 13 Claims

A rodent cage system having a plurality of cage-supporting cantilever beams journalled one above the other to a vertical supporting column. Each of the cantilever beams is hollow and supports a plurality of water containers within the beam and a plurality of rodent cages on the exterior of the beam,

there being a removable droppings-tray at the bottom of each cage. Each of the water containers has a water outlet opening near its bottom. A row of water access openings is formed in the hollow beam to provide access from the cages to the water outlet openings. The water access openings are large enough



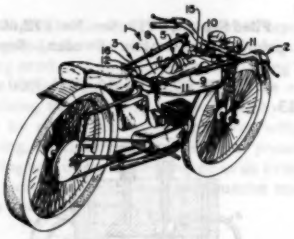
to allow access to the water outlet openings but are too small to permit rodents within the cages to gnaw on the water containers. Feed hoppers having sloping sides are attached along each of the cantilever beams between the beam and the adjacent rodent cages.

3,765,375

ANIMAL CARRYING DEVICE FOR MOTORCYCLES

Larry L. Young, 2707 S. 72nd Dr., Kansas City, Kans.

Filed Dec. 6, 1971, Ser. No. 204,876
Int. Cl. A62b *35/00*
U.S. Cl. 119—96 **4 Claims**



An animal carrying device for motorcycles including a frame removably mounted on a gasoline tank of a motorcycle and an animal harness resiliently connected to the frame in a position above the gasoline tank of the motorcycle to support pets or small children thereon and to restrain movement of pets or small children relative to the motorcycle. The frame includes spaced end members removably secured to respective opposite end portions of the gasoline tank and spaced adjustable side members extending between the end members to conform to the size of the motorcycle.

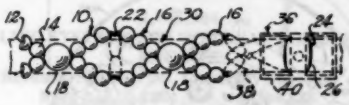
3,765,376

DECORATIVE ANIMAL COLLAR ATTACHMENT

Wilja M. Higgins, 2150 Kennesaw Way, Smyrna, Ga.

Filed Dec. 20, 1971, Ser. No. 209,775
Int. Cl. A01k *27/00*
U.S. Cl. 119—106 **4 Claims**

An ornamental jeweled or beaded dog collar attachment which combines with the medicated plastic collars sometimes known as "flea collars" used on dogs and cats to retard fleas and ticks. A thin, elastic jewelry rope is threaded with beads forming a series of joined loops through which the plastic flea collar is threaded from one side to the other and from back to front to decorate the plastic flea collar and help conceal it



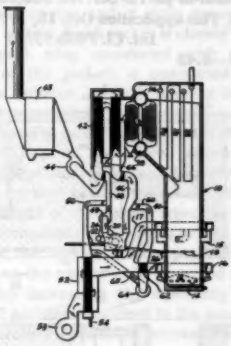
from view by means of false jewels, glass beads and the like. Transverse strings of beads or jewels across the loops provide support members for the flea collar when it is threaded into the loops.

3,765,377

AIR POLLUTION CONTROL SYSTEM FOR CHEMICAL RECOVERY UNIT

Jay Horl Freiday, West Hartford, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 23, 1972, Ser. No. 265,877
Int. Cl. F22d *1/00*
U.S. Cl. 122—7 C **2 Claims**



A chemical recovery unit in which black liquor from a pulping process is burned including a direct contact evaporator for concentrating the black liquor prior to its introduction into a furnace. Low pressure superheated steam is used as the heating medium in the direct contact evaporator, and also in a first air preheater supplying primary combustion air to the furnace. Moisture evaporated from the black liquor in the evaporator, and also steam leaving the first air preheater, is used to preheat secondary combustion air for the furnace.

3,765,378

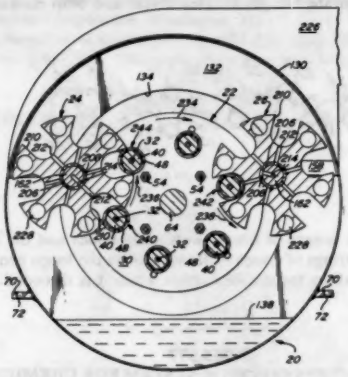
ROTARY ENGINE

John E. Waldrum, Ambler, Pa., assignor to Amchem Products, Inc., Ambler, Pa.

Filed Nov. 23, 1971, Ser. No. 201,346
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.15 **18 Claims**

A rotary engine comprising a driven rotor and a plurality of driving rotors mounted on shafts which are parallel to the shaft of the driven rotor. Each of the driving rotors has a plurality of radially extending slots formed therein. The driven rotor has a plurality of pistons mounted thereon which are

received in the slots. Each slot comprises a combustion chamber, and a fuel is injected into the slot, when one of the



pistons from the driven rotor is received in the slot. Upon ignition of the fuel, the piston is forced out of the slot, thereby supplying power to the driven rotor.

3,765,379

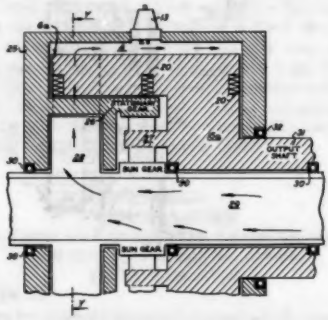
ROTARY TYPE POWER PLANT

Edward M. Thomas, 122 Bement Ave., Staten Island, N.Y.

Continuation-in-part of Ser. No. 868,662, Sept. 17, 1969, abandoned. This application Oct. 18, 1971, Ser. No. 190,010

Int. Cl. F02b *55/16*

U.S. Cl. 123—8.45 **13 Claims**



A rotary type power plant or engine having a round or cylindrical rotor member that is rotative within an outer body or housing having an internal chamber of non-round or substantially oval form. As the rotor turns, a variable spacing is formed between the rotor member and the non-round inner wall of the housing chamber. The rotor member carries movable vanes or sealing members which can be pivotal or slidable outwardly. The sealing members are constantly maintained against the non-round inner wall of the housing. Therefore, at times each of the vanes defines a larger area within the spacing between the rotor and inner wall of the housing than other vanes. An explosive force or other pressure is exerted against the surface of the vanes as each vane is extended to present the greater area to such force generated within the combustion chamber. This force acting against the vane causes the rotation of the rotor member within the housing. An inlet means is provided for introducing combustible fuel into the combustion chamber of the power plant in a direction away from the axis of rotation. That is, the combustible fuel introducing means is disposed adjacent the axis of rotation for the rotor member whereby the incoming fuel is carried by the natural centrifugal force of the rotating rotor member from the axis of rotation into the combustion chamber.

3,765,380

ELECTRONIC FUEL CONTROL SYSTEMS WITH NONLINEARIZING CIRCUIT MEANS INTERCONNECTING THE PRESSURE TRANSDUCER WITH THE MAIN COMPUTATION MEANS

Todd L. Rachel; John W. Horn, both of Elmira, and Harry P. Wertheimer, Horseheads, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 10, 1971, Ser. No. 170,565

Int. Cl. F02m *51/00*

U.S. Cl. 123—32 EA **1 Claim**

In a fuel control system of the type which combines signals indicative of engine speed and engine load to compute a fuel requirement signal, a passive, nonlinearizing circuit is interposed between the intake manifold pressure transducer and the main computing means. The nonlinearizing means is comprised of passive resistive elements in a series-parallel relationship to provide a suitably tailored output signal in response to a manifold pressure input signal.

3,765,381

METHODS OF INTRODUCING FUEL INTO AN INTERNAL COMBUSTION ENGINE AND DEVICES THEREFOR

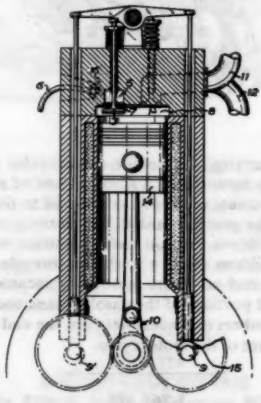
Alex Gustav Allan Nilsson, Ostra Farmvagen 34 B, Malmo, Sweden

Filed Sept. 8, 1971, Ser. No. 178,602

Claims priority, application Sweden, Sept. 10, 1970, 12313/70

Int. Cl. F02m *67/00*; **F02b** *3/00*

U.S. Cl. 123—33 VC **10 Claims**



The invention relates to a method permitting operation of internal combustion engines without using conventional ignition systems and without requiring such heavy fuel feed pumps as are necessary in diesel engines, or the complicated injection means required in engines with direct fuel injection against high compression pressure in the cylinders. The present invention makes use of fuel chambers communicating with the

cylinders through valve-controlled ports which can be opened and closed in the same way as conventional intake and exhaust valve ports in dependence on the rotation of the crankshaft and which are opened to the combustion chambers in the engine cylinders at a suitable point of time within a period immediately before and after completion of a compression stroke and are closed after initiation of a suction stroke for evacuating the fuel chambers for reducing the pressure and for a certain cooling of the valves.

3,765,382

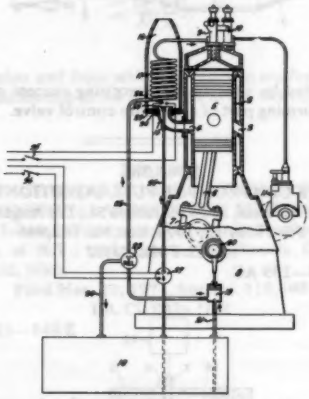
INTERNAL/EXTERNAL COMBUSTION ENGINE

Jacob Vandenberg, 503 Walnut Cres., Burlington, Ontario, Canada

Continuation-in-part of Ser. No. 85,447, Oct. 30, 1970, abandoned. This application June 23, 1972, Ser. No. 265,906

Int. Cl. F02b *69/00;* **F20m** *31/00;* **F02n** *17/00*

U.S. Cl. 123—34 A **11 Claims**



In an internal combustion engine the fuel is vaporized before being admitted into the engine expansion chamber, the fuel vapor being produced by fuel vaporizing tubing heated by the hot engine exhaust gases. When starting the engine the heat for vaporizing the fuel may be provided by an electric heater and/or by a fuel fed torch operative with the fuel vaporizing tubing. In starting fuel is fed under pressure to the vaporizing tubing and operates the engine in an external combustion mode, going to the internal combustion mode as the engine reaches operating speed.

3,765,383

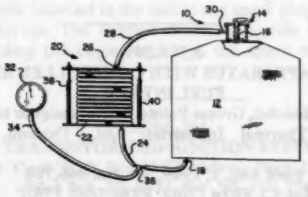
EXPANSIBLE RESERVOIR UNIT FOR LIQUID COOLED ENGINES

Venson E. Birdwell, Sr., Rt. 10, Box 245, Athens, Ala.

Continuation-in-part of Ser. No. 842,936, July 18, 1969, abandoned. This application Oct. 8, 1971, Ser. No. 187,701

Int. Cl. F01p *11.02*

U.S. Cl. 123—41.5 **11 Claims**



An expansible coolant receiving reservoir receives the entire expanded volume of coolant in a liquid cooled system to provide for an air-free coolant system. A slightly increased pressure is applied to the coolant up through normal operating temperatures, and a substantially greater pressure at higher temperatures, both pressures being lower than the pressure radiator cap setting.

3,765,384

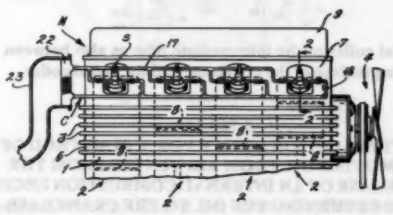
COOLING SYSTEMS FOR INTERNAL COMBUSTION ENGINES

John C. Barnard, 520 East Dr., University City, Mo.

Filed Dec. 3, 1971, Ser. No. 204,559

Int. Cl. F01p *1/10*

U.S. Cl. 123—41.32 **20 Claims**



A cooling system which comprises one or more cooling jackets secured to or otherwise formed with the head plate of an internal combustion engine and in close proximity to the cylinder heads of the engine. Each jacket is closely adjacent to and surrounds a spark plug associated with a cylinder. Furthermore, each of the jackets is connected to a heat exchanger, such as a radiator, through coolant delivery and return lines. A metal composition which is in a solid state at non-operating temperatures of the engine and is changed to a liquified state by the heat of the engine, when operating, serves as the coolant, and during operation is continually circulated through the jackets surrounding each of the spark plugs to cool the portions of the engine adjacent thereto. By virtue of cooling the immediate areas of the engine in proximity to the spark plugs, the heat of combustion can be rapidly dissipated which allows the engine to be operated at optimum temperatures, thereby increasing the operating efficiency, without the attendant problems incident to the presence of localized excess temperature conditions normally produced at or adjacent to the cylinder heads. Moreover, as a result of higher operating efficiency, the exhaust gases from engines equipped with the present cooling system contain a relatively low amount of the pollutants normally produced by internal combustion engines.

3,765,385

INTERNAL COMBUSTION ENGINE WITH INTERMEDIATE PIPE INSERTED IN PASSAGE BETWEEN CYLINDER HEAD AND CRANKCASE

Ulrich Conrad, Ludwigsburg, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 1, 1972, Ser. No. 285,646

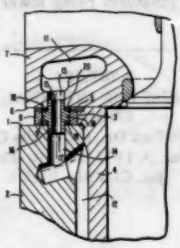
Claims priority, application Germany, Sept. 1, 1971, P 21 43 734.3

Int. Cl. F02f *1/10*

U.S. Cl. 123—41.84 **6 Claims**

An internal combustion engine in which the cylinder head is secured at the crankcase by means of cylinder head bolts and in which rigid spacer elements are provided between the cylinder head and the crankcase within the area of the cylinder head bolts; the radial collar of the liquid-cooled cylinder liner is mounted directly on the separating surface of the crankcase facing the cylinder head while an intermediate pipe is inserted into the through-passage for the cooling water between the cylinder head and crankcase; the intermediate

pipe includes a radial collar and one annular seal each is inserted between the separating surface of the cylinder head and



the radial collar of the intermediate pipe as also between the separating surface of the crankcase and the radial collar.

3,765,386

ANTI-POLLUTION DEVICE FOR AND METHOD OF REMOVING OIL FROM AIR VENTED FROM THE CRANKCASE OF AN INTERNAL COMBUSTION ENGINE AND RETURNING THE OIL TO THE CRANKCASE

Frank B. Ottofy, 2036 McCausland Avenue, St. Louis, Mo.

Filed June 16, 1971, Ser. No. 153,525

Int. Cl. F02f *9/04*

U.S. Cl. 123—119 B **9 Claims**

An anti-pollution device for and a method of removing oil from air vented from the crankcase of an internal combustion engine and returning the oil to the crankcase. The present device includes an elongated casing packed with wire mesh. At one end is an inlet connectible to the PCV valve on the crankcase or valve cover of an internal combustion engine and at the other end is an outlet connectible to the intake manifold of the engine. An oil detection and final filter is provided near or at the outlet end of the casing. A drain outlet for oil removed from oil laden air drawn through the wire mesh is provided including a check valve which is closed during operation of the engine and which is open for oil drainage purposes when the engine is shut off. The use of the present device and method substantially decreases carbon monoxide and other exhaust pipe emissions and lowers fouling of spark plugs to the extent of the oil removed.

3,765,387

FUEL INJECTION APPARATUS

Heinrich Knapp, Leonberg-Silberberg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

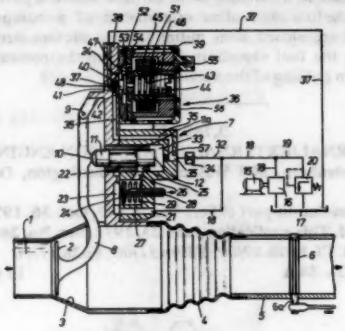
Filed July 3, 1972, Ser. No. 268,643

Claims priority, application Germany, July 5, 1971, P 21 33 435.0

Int. Cl. F02d *1/00*

U.S. Cl. 123—119 R **11 Claims**

In a fuel injection apparatus in which an air sensor deflected as a function of the intake air quantities maintains the air-to-fuel ratio at a constant value and wherein the return force affecting the air sensor and opposing the deflecting force of the air flow is derived from pressurized liquid, the pressure of said



liquid is varied by altering the energizing current of an electromagnet forming part of a pressure control valve.

3,765,388

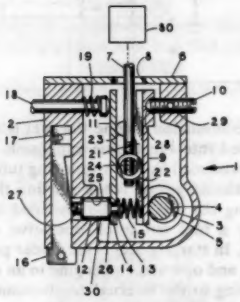
MIXTURE CONTROL FOR FUEL INJECTION PUMPS

Roger Owen Durham, 3958 Marathon St., Los Angeles, Calif.

Filed May 13, 1971, Ser. No. 142,946

Int. Cl. F02m *51/02*

U.S. Cl. 123—139 AC **10 Claims**



Mixture control mechanism for lever-type, variable-stroke fuel injection pumps having a power fulcrum.

The stroke of the pump is adjustably reduced by increasing the clearance at the power fulcrum.

In a pump having primary and secondary levers, the position of the pivotal support of the secondary lever is adjusted. In a pump having one lever and a fulcrum slide member, the position of one of the supports for the fulcrum slide member is adjusted.

3,765,389

HEATER APPARATUS WITH CONTROLLED AIR AND FUEL INTAKE

Herbert H. Henchel, Grosse Pointe, Mich., assignor to Fletcher-Henchel Thermal Industries, Ltd., Oshawa, Ontario, Canada

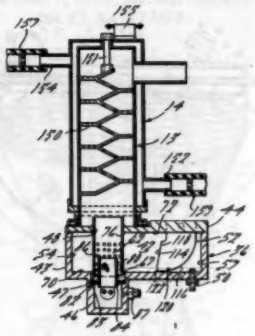
Filed Aug. 1, 1969, Ser. No. 846,708

Int. Cl. F02n *17/02*; F23d *5/00*, *15/02*

U.S. Cl. 123—142.5 R **21 Claims**

An engine pre-heater comprising a pair of concentric screens mounted in one end of a pear-shaped swirl chamber

and forming a combustion chamber in which diesel fuel vapors are mixed with forced air delivered from a fan through the



swirl chamber and from which oil residues are forced along a flow path extending to the other end of the swirl chamber to a drain.

3,765,390

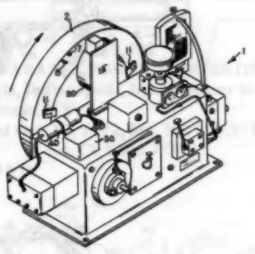
SOLID STATE BREAKERLESS IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Donald C. Loudon, Sidney, and Herman E. Bernhardt, Unadilla, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 10, 1971, Ser. No. 119,698

Int. Cl. F02p 1/02

U.S. Cl. 123—148 E **6 Claims**



A breakerless ignition system designed for installation on one and two cylinder spark ignited large horizontal engines having a flywheel. The ignition system is comprised of: a ferromagnetic flux conducting plate mounted on the flywheel of the engine; a stator assembly mounted on the engine, having a coil and a magnetic field responsive to the movement of the plate so that when the flywheel revolves and the flux conducting plate passes the stator assembly a voltage pulse is induced in the coil; and a control circuit for receiving and applying the voltage pulse induced in the coil to the spark plug at predetermined intervals. The control circuit is capable of advancing and retarding the engine spark as the speed of the engine changes.

3,765,391

TRANSISTORIZED IGNITION SYSTEM

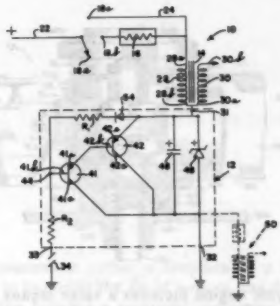
William R. Cook, P. O. Box 1193, Melrose Park, Ill.

Filed Feb. 22, 1971, Ser. No. 117,378

Int. Cl. F02p 3/02

U.S. Cl. 123—148 E **8 Claims**

An electrical system for use with an ignition system of the type including an ignition coil and breaker points. The electrical system provides for low current through the breaker points to minimize wear and corrosion of the breaker points, provides a high primary winding current at saturation of the primary winding and of the transistors of the electrical system to provide a strong spark, and has a minimum of components. The system includes first and second compound-connected



transistors with the base of the second transistor being connected to the emitter of the first transistor and the collectors of said transistors being connected to ground potential. A voltage dividing circuit is adapted to be connected in series with the breaker points of a distributor between the emitter of the second transistor and the breaker points. The base of the first transistor is connected to a predetermined point in the voltage dividing circuit; and the emitter and collector of the second transistor are adapted to be connected in series with the primary winding of an ignition coil and a source of electric potential.

3,765,392

ROTARY PISTON COMBUSTION ENGINE

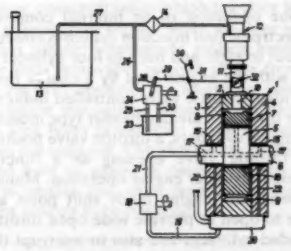
Walter Froede; Gottlieb Wilmers, and Anton Dekitsch, all of Neckarsulm, Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau/Bodensee, both of Germany

Filed Mar. 1, 1972, Ser. No. 230,557

Claims priority, application Germany, Mar. 4, 1971, P 21 10 333.3

Int. Cl. F01m 9/02

U.S. Cl. 123—196 R **11 Claims**



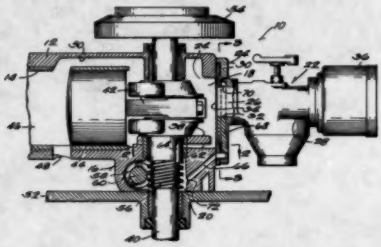
A rotary piston combustion engine including a housing made up of a shell with multiarcuate inner surface and side parts. A polygonal piston is rotatably mounted on the eccentric of an eccentric shaft in the housing. The piston is provided with sealing parts to slide along the inner housing surfaces and to seal off adjacent working chambers from each other. Finally, means are provided for introducing a basic additive into the working chambers at least during the phase when the engine is running hot.

3,765,393

LUBRICATION OF TWO-CYCLE ENGINE GEARBOX

Wesley C. Pipes, Galesburg, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed June 22, 1972, Ser. No. 265,345
Int. Cl. F01m *3/00*
U.S. Cl. 123—196 CP **9 Claims**



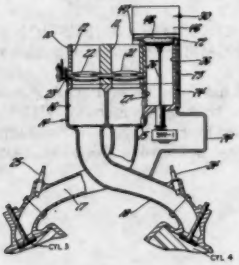
A two-cycle engine includes a valve means which periodically communicates with a crankcase sump collecting lubricating oil from the combustion mixture and a gearbox only during a period of positive pressure in the crankcase so that the oil is pumped from the crankcase into the gearbox to lubricate the gears therein.

3,765,394

SPLIT ENGINE OPERATION

Philip L. Francis, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 5, 1972, Ser. No. 286,188
Int. Cl. F02d *9/00*; F02m *13/04*, *73/04*
U.S. Cl. 123—198 F **7 Claims**



Split engine operation of an internal combustion engine having an electronic fuel injection system is effected automatically from four to eight and back to four cylinder operation in compliance with the engine load by a charge forming device having individual throttle valve controlled induction passages supplying air through a divided header type intake manifold to four of the engine cylinders, a throttle valve positioning device controlling throttle valve opening as a function of four cylinder or eight cylinder engine operation. Manifold vacuum is used to sense the engine mode shift point and causes a spoiler valve to open to provide wide open throttle operation of the unloaded cylinders and also to interrupt the triggering impulses to the fuel injection nozzle of the unloaded cylinders.

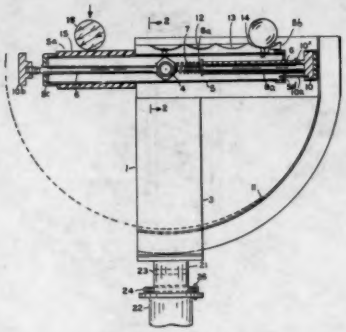
3,765,395

CENTRIFUGAL TYPE BALL PROJECTING DEVICE

Alexander McD. Hess, 67 Hilton Ave., Garden City, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,155
Int. Cl. F41b *3/04*
U.S. Cl. 124—4 **4 Claims**

A ball throwing machine has a mounting base with a lever pivotally mounted on the base. A plurality of spaced ball holding depressions are mounted on the top rear missle portion of said lever. A braking surface is mounted on said base and an adjustable brake shoe is mounted on the missile receiving end of said lever. The positioning of a ball in a desired depression and varying of the amount of braking causes a variation in the trajectory of a ball. The lever is adapted to be pivoted quickly to catapult a ball mounted in one of the depressions.

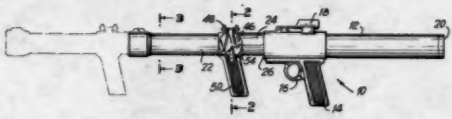


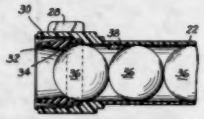
3,765,396

AIR GUNS

Charles M. Kienholz, and Raymond J. Lohr, both of Erie, Pa., assignors to Louis Marx & Co., Inc., New York, N.Y.

Filed July 6, 1971, Ser. No. 160,023
Int. Cl. F41b *11/02*; F41f *1/04*
U.S. Cl. 124—13 R **9 Claims**





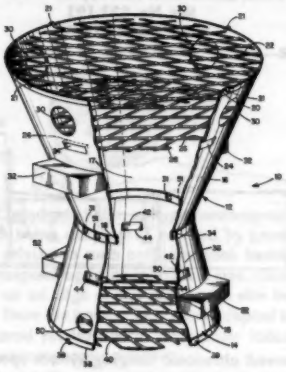
An air gun where a series of spherical projectiles in a gun barrel are fired by air pressure one after the other out through the muzzle end of the barrel. The barrel has at its muzzle end a resilient sleeve through which each projectile will be propelled in response to the presence of sufficient air pressure behind each projectile to propel it through the resilient sleeve. This sleeve has a front end portion which is surrounded with clearance by the barrel to facilitate the movement of projectiles past it. Behind the resilient sleeve the barrel carries on one side of its interior a relatively small retarding block of resilient compressible material which engages the projectile next to the one which is about to be fired for retarding the movement of the series of projectiles toward the resilient sleeve, with the exception of that one projectile which is next to the sleeve to be next fired from the gun. This movement of the series of projectiles through the barrel is also caused by the air pressure behind the projectiles. Thus the same air pressure source behind the projectiles is utilized both for feeding the projectiles forwardly and for propelling the projectiles out of the gun.

3,765,397

PORTABLE CHARCOAL STOVE

Raymond Eugene Henderson, One Boston Place, Waban, Mass.

Filed Mar. 7, 1973, Ser. No. 338,811
Int. Cl. A47j 37/07
U.S. Cl. 126—25 R 9 Claims



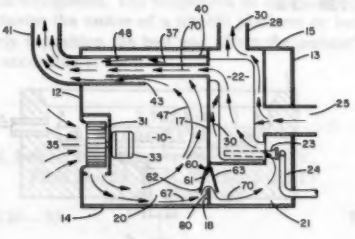
A portable and nestable hibachi type stove having two housings defining a first chamber and a larger second chamber, respectively, each of the housings having a tapered wall configuration extending between a larger open end and a smaller open end. A grate, a rack and one or more draft openings are provided in each housing, with the smaller ends of each housing being of like size and configuration for mating with one another. Either housing can serve as an upper firebox chamber or a lower preignition chamber to allow selection of different size cooking surfaces, and the entire stove structure is demountable and nestable for ease of storage and transportation.

3,765,398

HEATING APPARATUS FOR OUTDOORS OPERATION

Richard L. Morris, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 19, 1972, Ser. No. 298,971
Int. Cl. F24h 3/06
U.S. Cl. 126—110 B 5 Claims



The casing of a rooftop heating apparatus is formed with plenum and heat exchanger compartments separated by a partition formed with a passage for air flow from the plenum compartment to the burner in the heat exchanger compartment. Damper means is mounted in the air flow passage of the partition and is normally positioned for maximum air flow with the plenum pressurized by a constant speed blower. The intake of the blower is subject to varying wind pressures. The damper means is responsive to air pressure in the plenum to vary the areas of the air flow passage proportionate to the pressure in the plenum and accordingly, to maintain the air flow to the burner at a predetermined level, whereby the burner operation is not adversely affected by gusts of wind.

3,765,399

FIREPLACE HUMIDIFIER AND SMOKE RETURN

William Cecil Gerlach, 9339 Fairground Rd., Louisville, Ky.

Filed Mar. 19, 1971, Ser. No. 126,244
Int. Cl. F24f 3/14
U.S. Cl. 126—120 1 Claim

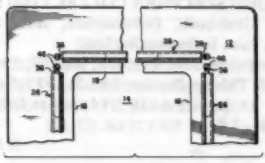
A unit for placement within a fireplace of a house, the device serving to humidify the air of a room, the device comprising a housing forming a reservoir containing water, the water being heated by the smoke carrying thermo heat passed the housing so to heat the water into steam, the smoke after circulating passed the housing then curling back into the fireplace due to a specifically shaped baffle formed along a forward side of the housing.

3,765,400

REMOVABLE OVEN DOOR GASKET

Ernie A. Meier, Glen Ellyn, Ill., and Alfred M. Micallef, Ann Arbor, Mich., assignors to K. & M. Rubber Co., Elk Grove, Ill.

Filed Jan. 14, 1972, Ser. No. 217,862
Int. Cl. F24c 15/02
U.S. Cl. 126—190 9 Claims



An oven door construction in which the door is adapted to be sealed to a front plane surface when the door is closed. The seal comprises tubular elastomeric gaskets having metal inserts in their ends removably secured to the front plane surface around the oven opening. The inserts are held in place by room temperature vulcanizing adhesive and have structures cooperating with holes in the front plane surface into which the structures are engaged. The gaskets are stretched to make them fit and held in place by tension, while being easily removable to enable the oven front plane surface to be cleaned or the gaskets to be replaced.

3,765,401

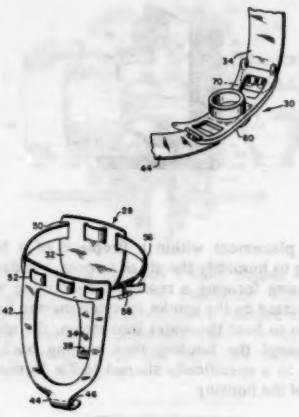
SUSTAINING BELT FOR AN INSTRUMENT FOR ADMINISTERING FLUID INTO THE INTESTINAL TRACT PER RECTUM

Alexander A. Vass, 309 E. 87th St., New York, N.Y.

Filed July 7, 1971, Ser. No. 160,367
Int. Cl. A61b 19/00; A61m 25/02
U.S. Cl. 128—1 R 12 Claims

A belt for sustaining an article in site in the rectal or urogenital area formed by a waist-surrounding band having de-

pendent dorsal and frontal aprons laterally adjustably held thereon and a bridge, engageable against the article to be held in situ, engaged by the ends of the aprons. In a form of the device for sustaining a rectal nozzle having an enlargement surrounding the nozzle tube distally of its rectum entering end, whose frontal surface abuts the stoma surrounding the anal



opening, the bridge is rigid and is formed with an opening fitting about the nozzle tube with its edges abutting the distal end of the enlargement. The aprons are die-cut in nested relation from a sheet of pliable material with spaced openings formed at their upper edges through which the waist band is interlaced.

3,765,402

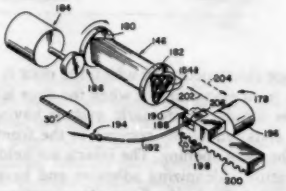
BLOOD SPECIMEN COLLECTING SYSTEM

Robert H. Grabhorn, Indianapolis, Ind., assignor to Systematiks, Inc., Indianapolis, Ind.

Division of Ser. No. 824,977, May 15, 1969, Pat. No. 3,633,566. This application Dec. 8, 1971, Ser. No. 205,941

Int. Cl. A61b *5/14*; A61m *1/00*

U.S. Cl. 128—2 F **22 Claims**



A blood specimen collecting device comprising a holder for holding conventional evacuated test tubes, each such tube being sealed with a conventional rubber-like stopper, hollow needle for penetrating through such stoppers and into such tubes, a vein puncturing hollow needle, and flexible tube for connecting the needle to the vein puncturing needle. The holder for holding the tubes is arranged so that the stoppers face the needle, and a powered drive is arranged to provide relative reciprocation between the needle and the tube holder to cause the needle to penetrate through such stoppers. In many cases, such tubes contain materials, such as preservatives, coagulants and anti-coagulants, with which the blood must be thoroughly mixed promptly after or immediately as soon as it is withdrawn from the vein. Thus, the device includes an oscillator for gently oscillating such tubes while blood is being drawn therein.

3,765,403

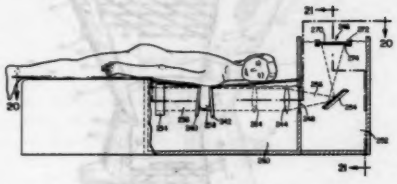
ULTRASONIC IMAGING TECHNIQUES AND MAMMOGRAPH EQUIPMENT

Byron B. Brenden, Richland, Wash., assignor to Holotron Corporation, Wilmington, Del.

Division of Ser. No. 730,260, May 20, 1968, Pat. No. 3,585,847, which is a continuation-in-part of Ser. No. 710,991, March 6, 1968, abandoned. This application Mar. 11, 1971, Ser. No. 123,191

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 V **44 Claims**



An improved ultrasonic imaging system specially adapted for examination of a female breast utilizing direct imaging (two-dimensional) or holographic imaging (three-dimensional) techniques. Improvements in both types of ultrasonic imaging are described which utilize an improved fluid-filled lens for imaging an ultrasonic field passing through the breast or other object under investigation onto an area detector from which object information may be read out by light. Use of an ultrasonic lens in the reference beam of a holographic imaging system is also disclosed. A technique for holographic imaging wherein viewing optics are focused on the area detector directly instead of upon a focused image in space is also described with improved results under certain circumstances.

3,765,404

METHOD FOR THE PRODUCTION OF SHEETS OF STRATUM CORNEUM

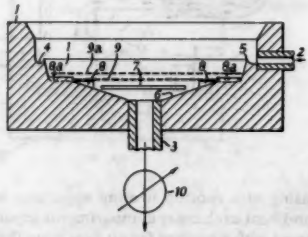
Bohuslav Turek, Paris, France, assignor to Richardson-Merrell Limited, London, England

Filed Apr. 17, 1972, Ser. No. 244,560

Claims priority, application Great Britain, Apr. 19, 1971, 10,003/71

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 R **3 Claims**



An intact sheet of stratum corneum is obtained by placing a piece of adhesive tape bearing stratum corneum which has been removed from the skin of a donor upon a fine screen with the stratum corneum in contact with the screen. The tape/stratum corneum composite is then continuously washed with a solvent which exerts a softening effect upon the tape adhesive. When the adhesive is sufficiently soft, the tape is removed from the stratum corneum.

3,765,405

SPHYGMOMANOMETER CUFF

Zygmunt Natkanski, Chicago, Ill., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 29, 1971, Ser. No. 193,876
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 C 6 Claims

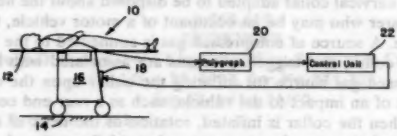
A series of graduated-size sphygmomanometer cuffs are provided, each being adapted to be used by encompassing a limb of a size related to such cuff, and each having a distinctive color corresponding to its individual size. Each cuff has a pointer index on an edge of the cuff, and a size index spaced longitudinally from the pointer index and adapted to be in substantial registered relation with the pointer index when the cuff is in limb encompassing position.

3,765,406

TILTABLE BED WITH AUTOMATIC CONTROL SYSTEM

James F. Toole, 1836 Virginia Road; Ralph W. Barnes, Jr., 440 Flynt Valley Drive, and Richard Janeway, 2815 Country Club Road, all of Winston-Salem, N.C.

Filed Sept. 13, 1972, Ser. No. 288,719
Int. Cl. A61h 1/00
U.S. Cl. 128—24 R 11 Claims



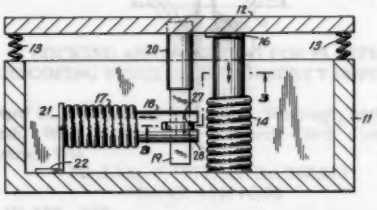
A tiltable bed automatic control system for regulation of physiological characteristics such as blood pressure within pre-determined limits. For example, the patient's blood pressure is continuously measured and monitored through the use of suitable equipment. The magnitude of that pressure selectively actuates the motor of a tiltable platform or bed to appropriately reposition the bed and affect the patient's blood pressure accordingly.

3,765,407

EXERCISE STAND

Charles S. Prince, 509 Fifth Ave., New York, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,917
Int. Cl. A61h 1/00
U.S. Cl. 128—33 7 Claims



A platform type exercise stand, wherein a spring-loaded platform is coupled to a housing so when the user stands on the platform, the platform oscillates from side to side as well as vibrates so as to cause side-to-side movements of the user's torso. The combination of the side-to-side and vibrating movements causes the user to exercise his body sufficiently to lose weight along the waistline and the hip. The oscillating and vibrational motion is provided by a pair of electromagnetic motors mounted in the housing of the stand and coupled to the platform.

3,765,408

SOFT OBSTETRIC VACUUM CUP FOR ASSISTING CHILDBIRTH

Kiyoshi Kawai, Tokyo, Japan, assignor to Kabushiki Kaisha Kawai Tosando, Tokyo-to, Japan

Filed Mar. 16, 1972, Ser. No. 235,365
Int. Cl. A61b 17/42
U.S. Cl. 128—352 6 Claims

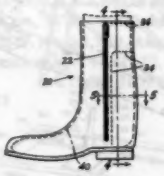
A soft obstetric vacuum cup for assisting childbirth comprising a cup body made of an elastic material, a plurality of recessed portions formed around the inner surface of the cup body in a spaced apart relationship, a suction tube connected to the bottom of the cup body, and a plurality of passages each communicating one of the recessed portions to the suction tube.

3,765,409

ORTHOPEDIC DROP FOOT BOOT

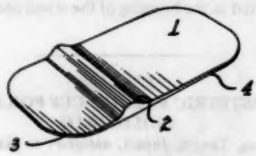
Daniel R. Merkle, 49 Fairmont, Alton, Ill.

Filed Nov. 17, 1971, Ser. No. 199,541
Int. Cl. A61f 3/00
U.S. Cl. 128—80 E 3 Claims



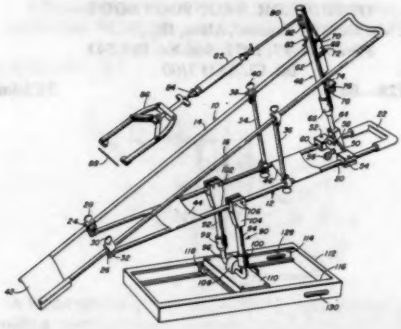
An orthopedic drop foot boot provided with a flexible sheet like fabric covered layer at the rear of the boot. The liner has a spring-like action to correct the drop foot tendency of the user with the foot being held by the spring-like action of the liner at a perpendicular position to the leg to facilitate walking. For increased spring-like action of the boot, separate liners may be employed which overlap at the rear portion of the boot. The liners extend from the sides of the boot through the rear portion and from the bottom of the boot to the calf portion. The boot fits snugly to provide the spring-like action, and a zipper extending from the top of the boot to the bottom facilitates the putting on and removal and holds the boot snugly around the ankle and lower leg of the wearer.

3,765,410
PROSTHETIC NAIL
James J. Berens, 44 East Pierson Street, Phoenix, Ariz.
Filed Aug. 23, 1971, Ser. No. 173,936
Int. Cl. A61f 5/00
U.S. Cl. 128—81 A 2 Claims



The device acts as a pliable prosthetic nail in establishing the normal anatomical relationship between the defective lateral and distal nail margin and the normal groove adjacent to a normal nail fold of skin. The device, in a flat, extended configuration, has a generally rectangular outline. When viewed in profile, one side of the device has a smoothly formed ridge generally centered on the lateral axis of the rectangle. In operation, the device is applied to the ingrown nail such that the ridge is forced between, and in contacting relationship with, both the nail and the adjoining soft tissues. The remaining portions of the device provide a means for securing the device. The ridge exerts pressure to segregate the ingrown portion of the lateral nail margin from the adjoining inflamed soft tissues and thereby permits the nail to grow out without digging into or otherwise painfully disturbing the adjacent tender skin area.

3,765,411
MOBILE TRACTION APPARATUS
George Dewey Ward, Jr., Morrisville, Vt., assignor to Medical Controls, Inc., Boston, Mass.
Filed Jan. 3, 1972, Ser. No. 215,039
Int. Cl. A61f 3/00
U.S. Cl. 128—84 C 7 Claims

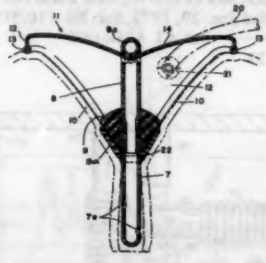


A portable traction apparatus provides a patient with mobility in bed as well as freedom to use a wheelchair, or otherwise move about as by stretcher, while maintaining substantially constant tractive force on the fractured member. An articulated support is provided for cradling the leg above and below the knee with locking means provided for pre-setting the knee angle. Traction is applied to the fractured member by means of a traction bow and surgical pin connected to a pulley system incorporating a spring scale for adjusting tractive force thereon. Tractive force is applied in line with the fractured member. The support and the traction producing elements are pivotally supported in such a fashion as to balance the leg irrespective of shifting about by the patient whereby the fractured members will not be disturbed from a preset fixed position. When used in the bed, the pivotal support is mounted on a carriage which is free to move longitudinally to permit the patient to be raised and lowered from a prone to a sitting position without changing traction force. The device is detachably connected to the carriage to permit transfer to a wheelchair provided with a cooperating attachment whereby the patient may be wheeled about without changing traction force or leg support.

3,765,412
INFLATABLE CERVICAL COLLAR FOR PREVENTION OF HEAD AND NECK INJURY
Ayub K. Ommaya, and Arthur E. Hirsch, both of Bethesda, Md., assignors to The United States of America as represented by the Secretary, Department of Health, Education and Welfare, Washington, D.C.
Filed Dec. 23, 1971, Ser. No. 211,600
Int. Cl. A61h 1/02
U.S. Cl. 128—132 5 Claims

A novel medical appliance is disclosed comprising an inflatable cervical collar adapted to be disposed about the neck of a wearer who may be an occupant of a motor vehicle, for example. A source of compressed gas is connected to the inflatable collar, and triggering means are associated with the compressed gas source for inflating the collar upon the occurence of an impact to the vehicle, such as a rear-end collision. When the collar is inflated, rotation of the neck of the wearer relative to the torso is substantially reduced or prevented, thus preventing a whiplash-like head or neck injury.

3,765,413
EQUIPMENT FOR RECTALLY ADMINISTERING ENEMAS
Edwin Lepar, 542-B-1 Bellscourt Salem Harbor Apts., Andalusia, Pa.
Filed Dec. 8, 1971, Ser. No. 205,833
Int. Cl. A61m 3/00, 25/00; A61f 5/44
U.S. Cl. 128—245 12 Claims



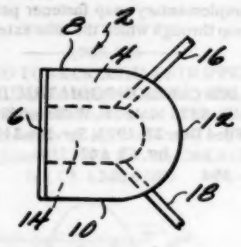
Equipment for delivering a liquid such as a barium solution into the anus, in which equipment provision is made for retain-

ing the equipment in the desired position under the influence of reduced pressure or vacuum. One or more vacuum chambers are provided for this purpose and a catheter is mounted on the vacuum chamber or chambers and has a mass of porous resilient material surrounding the catheter in position to engage the body surfaces surrounding the anus in order to provide a seal to prevent leakage of the enema liquid.

3,765,414
DRUG RELEASE SYSTEM

Myron Arlen, Great Neck, N.Y., assignor to Hydro-Med. Sciences, Inc., New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,685
Int. Cl. A61b *5/00*; **A61m** *7/00, 5/00*
U.S. Cl. 128—260 **38 Claims**

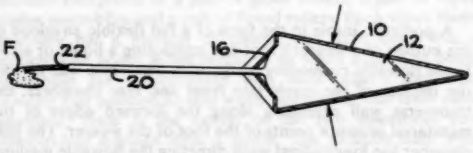


There is disclosed a device and method for delivery of a chemotherapeutic over a prolonged period of time to the body. In case the therapeutic has an adverse effect on the body the device can be flushed and a more suitable therapeutic substituted.

3,765,415
DISPENSER

Hugh O. Brown, 1414 Kingfisher Way, Sunnyvale, Calif.

Filed Dec. 23, 1971, Ser. No. 211,325
Int. Cl. A61m *31/00*
U.S. Cl. 128—261 **3 Claims**



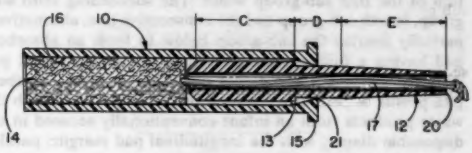
A dispenser arranged for the injection of fluent pharmaceutical formulations into body cavities including an integral flexible container for the formulation and a flexible dispensing tube arranged to move from an invaginated collapsed disposition to a projecting operative dispensing disposition in response to application of external pressure through, for example, a collapsible package for the unit.

3,765,416
LOCKING ARRANGEMENT FOR PLASTIC TELESCOPING TUBES USED TO INSERT TAMPONS AND THE LIKE

Edward E. Werner, and Edward G. Wollangk, both of Oshkosh, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Aug. 4, 1971, Ser. No. 168,851
Int. Cl. A61f *16/00*
U.S. Cl. 128—263 **6 Claims**

A smoothly releasable temporary locking arrangement for a pair of telescoping plastic tubes such as are employed for inserting tampons or the like into body orifices. The locking arrangement assures against premature bidirectional longitudinal movement between the tubes. Backward movement of the inner tube is prevented by a circumferential raised shoulder portion near the front end of the inner tube which cooperates with a portion of reduced internal diameter at the

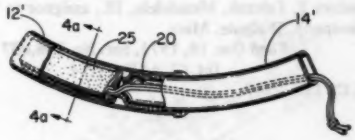


trailing end of the outer tube. Forward movement of the interior tube is inhibited by the frictional relationship between the tubes provided by a particularly defined degree of interference between a circumferential portion of the inner tube adjacent the raised shoulder portion and the reduced diameter terminal portion of the outer tube.

3,765,417
ARCUATE TAMPON APPLICATOR

Joseph R. Crockford, Flushing, N.Y., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 24, 1971, Ser. No. 118,291
Int. Cl. A61f *15/00, 13/20*
U.S. Cl. 128—263 **2 Claims**

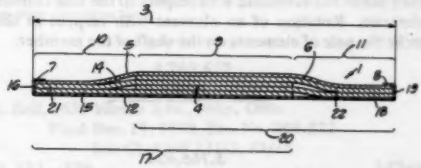


A preshaped tampon applicator and vaginal tampon in which the applicator is a pair of telescoping elements having an arc of specified radius and the tampon is a compressed and folded strip of the same arcuate shape and radius as the applicator.

3,765,418
OPTIMUM PROFILE ABSORBENT DIAPER PAD

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.

Continuation of Ser. No. 63,749, Aug. 14, 1970, abandoned.
This application Apr. 17, 1972, Ser. No. 244,982
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **7 Claims**



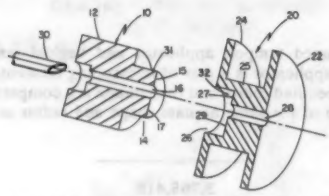
A single use, rectangular area, disposable diaper pad has an optimum profile absorbent diaper pad formed of multiple ply of absorbent tissue paper sheets disposed coplanarly adjacent. A first plurality of equal width, fluid absorbent tissue paper ply are coplanarly adjacently disposed along a first absorbent pad longitudinal diaper pad margin forming a first absorbent pad

sub-group. A second plurality of equal width, fluid absorbent tissue paper sheet ply are coadjacently disposed along an opposed second longitudinal diaper pad margin forming a second absorbent pad-sub-group. The first sub-group, and the second sub-group, have cooperative sub-group widths adapting the second sub-group to partially overlay a substantial portion of the first sub-group width. The succeeding third sub-group, fourth sub-group and the consecutive like, alternatively partially overlay the sub-group below to form an absorbent pad having a thicker fluid absorptive structure central pad disposed the length of a diaper pad. The optimum absorbent pad profile is centrally disposed in the diaper to absorb the waste products from an infant conventionally secured in the disposable diaper, with the longitudinal pad margins parallel to the infant's legs.

3,765,419
AMYLOSE ACETATE
Francis C. Usher, Houston, Tex., assignor to International Paper Company, New York, N.Y.
Filed May 14, 1971, Ser. No. 143,616
Int. Cl. A61b *17/12, 17/00;* **A61k** *27/00*
U.S. Cl. 128—325 **5 Claims**

A novel process for providing surgical hemostasis. In the process, an acetylated amylose with a critical range of acetate is employed.

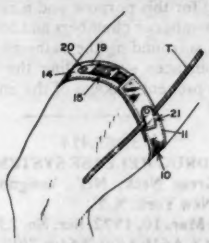
3,765,420
ECCENTRIC LOCKING DEVICE FOR SURGICAL DRAINAGE MEMBERS
Theodore F. Felczak, Mundelein, Ill., assignor to The Kendall Company, Walpole, Mass.
Filed Dec. 16, 1971, Ser. No. 208,657
Int. Cl. A61b *17/34*
U.S. Cl. 128—347 **6 Claims**



A locking guard device for regulating the penetrating depth of a rigid or semi-rigid hollow shaft member used for draining body cavities, such as a hypodermic needle, catheter, and the like, which guard is mounted on the shaft member through a channel in each of a male and female elements of the guard, the channel in each element being concentric with respect to each other but eccentric with respect to the true centers of the elements. Rotation of an element with respect to the other locks the pair of elements on the shaft of the member.

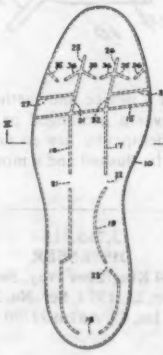
3,765,421
HOLDERS FOR SURGICAL TUBES
John Poprik, 1000 Hollywood NE, Warren, Ohio
Filed Mar. 10, 1972, Ser. No. 233,517
Int. Cl. A61m *25/02*
U.S. Cl. 128—349 R **3 Claims**

A device for securing a small-diameter surgical tube, such as a catheter tube and the like, to the limb of a human, comprising an elongated fabric strap adapted to be wound like a bandage transversely around the human limb. An elastic strip is secured to one end of the strap and carries one part of a



snap fastener which is adapted to engage with a selected one of several complementary snap fastener parts. The strip carries a small loop through which the tube extends.

3,765,422
FLUID CUSHION PODIATRIC INSOLE
Henry M. Smith, 8575 Main St., Williamsville, N.Y.
Filed Dec. 27, 1971, Ser. No. 211,945
Int. Cl. A61f *5/14*
U.S. Cl. 128—594 **8 Claims**



A podiatric insole in the form of a flat flexible envelope of the outline of a wearer's foot and containing a liquid or semi-liquid flowable cushioning medium. A transverse wall divides the interior of the insole into front and rear chambers, the transverse wall extending along the forward edges of the metatarsal pressure points of the foot of the wearer. The rear chamber has longitudinal walls directing the flowable medium forwardly and rearwardly in such chamber and the front chamber may also have such flow-directing longitudinal wall formations.

3,765,423
DISPOSABLE TOBACCO CARTRIDGE WITH TAMPER
Jung An Kim, 12 Chenery St., San Francisco, Calif.
Filed June 22, 1972, Ser. No. 265,265
Int. Cl. A24d *01/14;* **A24f** *09/02*
U.S. Cl. 131—3 **5 Claims**

A disposable tobacco cartridge for filling the bowl of a pipe with tobacoo and then tamping it. A piston is combined with a

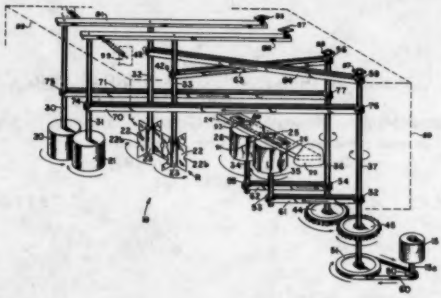
hollow paper cylinder secured near one end thereof and projecting beyond it and defining a hollow space filled with a charge of tobacco. The piston is provided with an outer end that is pressed for moving the piston and an inner end, and it has a cylindrical wall with a diameter less than that of the bowl of the pipe to be filled. The flexible wrapping makes a cylinder approximately the same diameter as the piston. It has two diametrically opposite portions that are secured to the wall of the piston near the inner end of the piston. The wrapping provides a hollow cylindrical space that extends beyond the piston for a distance somewhat shorter than the length of the piston and at its distal end the wrapping has a folded-over closure. When the cartridge is properly held and the piston pushed, it ejects the tobacco through a folded closure. Then the piston is used as a tamper for the tobacco in the bowl of the pipe.

3,765,424

CURED TOBACCO LEAF STRIPPER

John E. Morrison, Jr., and Elmon E. Yoder, both of Lexington, Ky., assignors to the United States of America as represented by the Secretary of Agriculture

Filed June 23, 1972, Ser. No. 266,023
Int. Cl. A24b *05/04*
U.S. Cl. 131—131 **6 Claims**



An apparatus for stripping leaves from the stalks of cured tobacco comprised of a pair of guide rollers, a pair of wiper blades assemblies and a pair of fluted rollers. Each wiper blade assembly has a pluralty of blades, and each blade has a semicircular notch in the center of its wiper edge. The blade assemblies are synchronized with each other's rotational velocity and position so that when two blades, one from each assembly, mate in the center of the two assemblies and semicircular notches form a circle. The tobacco stalk with leaves is introduced into the apparatus tip first through the guide rollers which guide the stalk tip into the notches of the blades in the counter-revolving wiper assemblies. As the stalk and leaves enter the area described by the notches in the wiper blades the leaves are severed from the stalk. As the stalk passes through the wiper blade assembly it is grasped by the rotating fluted rollers and drawn through the defoliating stage after which it is ejected from the apparatus. The guide rollers and wiper blade assemblies have cantilevered supports to allow for variances in stalk diameters while the fluted rollers are provided with bearing and track means for that purpose.

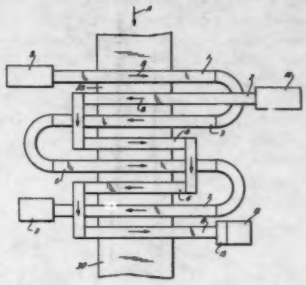
3,765,425

PUFFING OF TOBACCO

George E. Stungis, St. Matthews; Steve L. Merker; Harlis A. Parish, Jr., both of Louisville, all of Ky., and Richard G. Striegel, Floyds Knobs, Ind., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 2, 1971, Ser. No. 177,268
Int. Cl. A24b *03/18*
U.S. Cl. 131—140 P **6 Claims**

Tobacco stems and lamina are puffed by microwave energy, employing intermeshed, slotted wave guides the wave pattern in the device is applied in successive means so that the microwave energy in one means is out of phase with its adjacent means. The tobacco may have a given moisture level, a microwave energy absorbing organic fluid impregnant, or a mixture of the two at the time of treatment.

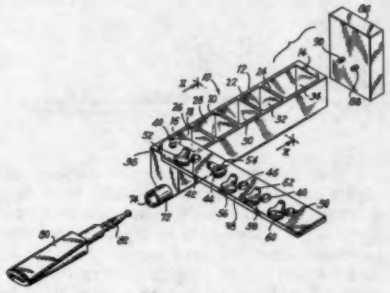


3,765,426

PIPE WITH A PLURALITY OF RECEPTACLES

Josef Halaby, 420 E. 80th St., New York, N.Y.

Filed Mar. 13, 1972, Ser. No. 233,963
Int. Cl. A24f *05/10*
U.S. Cl. 131—176 **5 Claims**



A pipe having a series of receptacles coupled to a common stem and adapted to accommodate separate charges of tobacco. A common lid covers all of the receptacles and is displaceable to permit the insertion of tobacco. The lid is provided with draft openings over the respective receptacles, there being individually controllable covers associated with the openings to allow a draft to be drawn through one receptacle at a time. A tobacco lighting device may be incorporated into the pipe construction.

3,765,427

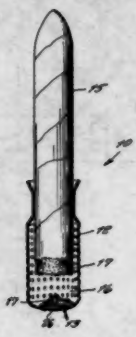
CIGAR ASH CATCHER

Sam S. Bell, 1635 Hiram Ave., Niles, Ohio

Filed Dec. 17, 1971, Ser. No. 209,122
Int. Cl. A24f *13/12, 13/16*
U.S. Cl. 131—178 **1 Claim**

An ash receiver secureable over a lighted end of a cigar so to prevent scattering ashes and confining the flames, the device comprising a tubular enclosure including a cylindrical side wall and circular end wall, the circular end wall being integral with said cylindrical side wall and made perferably of plastic material, the opposite end of the device receiving the end of the cigar, and the sleeve tubular portion thereof having perforations therethrough so to allow access of air to the

flame, the circular end wall being fitted with a magnifying lens so that light rays from the lighted end of the cigar are concentrated through the lens so that the device forms a miniature flashlight such as for illuminating a keyhole in a darkness.

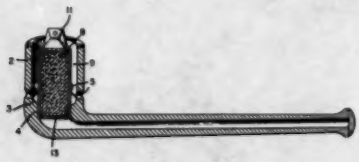


3,765,428

SMOKING PIPE AND PREFORMED CHARGE COMBINATION

Jon W. Beam, 510 E. Cherry St., Cushing, Okla.

Filed Apr. 12, 1972, Ser. No. 243,144
Int. Cl. A24f 01/22
U.S. Cl. 131—196 **5 Claims**



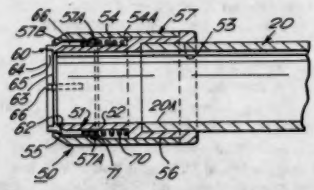
A tobacco smoking pipe and preformed tobacco charge combination are provided wherein the tobacco smoking pipe is modified in such a manner that a short preformed tobacco rod type charge which is encased in an impermeable but combustible sleeve and which is partially covered by metal foil may be seated centrally therein, so as to allow up draft circulation of air around said charge through a plurality of holes which are provided through the foil portion bowl above the charge seat, which is located internally in the base of the aforesaid pipe bowl.

3,765,429

ARTICLE STORING AND DISPENSING UNIT WITH MOVABLY MOUNTED GATE

Charles E. Rocheleau, 611 Victoria St., Sudbury, Ontario, Canada

Filed Dec. 21, 1971, Ser. No. 210,473
Claims priority, application Canada, June 1, 1971, 114,456; Oct. 21, 1971, 125,740
Int. Cl. G07d 1/00
U.S. Cl. 133—5 A **2 Claims**



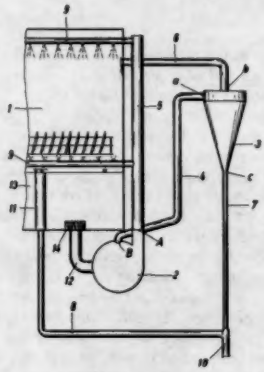
A portable storing and dispensing device for disc-like members such as chips, coins, and the like which includes an elongated storage chamber or magazine for holding the disc-like members in stacked relation one on top of the other and having an open end through which the disc-like members are dispensed. A resilient member partially overlies the open end serving to support the members in the magazine and act as a gate to dispense one member at a time as the magazine is pressed onto a supporting surface such as a table top or the like. The resilient member is biased or spring-loaded normally to project outwardly from the open end. The resilient member is reciprocally mounted on the magazine with a cam and a cam surface on respectively one and the other of the magazine and resilient sleeve and arranged such that as the resilient member and magazine are moved relative to one another, the innermost dimension of the resilient member is enlarged sufficiently as to allow a disc of predetermined size to pass therethrough. The opposite end of the magazine is covered with a detachable lid removable for loading the magazine. To load the magazine, a second element is provided which holds a predetermined number of disc-like elements such as chips and is funnel-shaped with a removable cover on each of the two ends. The entire assembly, that is the storing and dispensing device as well as the loading device, may be made of any material such as plastic, metal or the like.

3,765,430

AUTOMATIC DISH RINSING MACHINE HAVING A CENTRIFUGAL FORCE SEPARATOR

Helmut Muller, Meckenbeuren, Germany, assignor to Karl Winterhalter KG, Meckenbeuren, Germany

Filed Oct. 21, 1971, Ser. No. 191,430
Int. Cl. B08b 3/02
U.S. Cl. 134—109 **5 Claims**



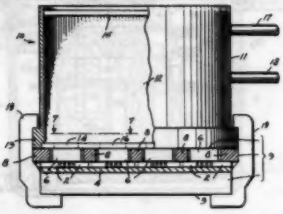
An automatic dish rinsing machine particularly for commercial purposes having a centrifugal force separator. A portion of the washing suds or detergent solution which is taken from the lower portion of the rinsing space is fed by means of a pump to the centrifugal separator in a tangential direction. The upper outlet of the separator which carries the cleaned detergent solution leads to the rinsing space above the level of the detergent solution. The pump generates a pressure of more than 2 kilograms per square centimeter above atmospheric pressure and has two outlets, one of which is connected to a tube having nozzles disposed in the rinsing space by means of a line carrying the detergent solution while the other one is connected by a line which carries a portion of the fluid to the tangentially extending inlet of the separator.

3,765,431

APPARATUS FOR HANDLING AND MAINTAINING THE ORIENTATION OF A MATRIX OF MINIATURE ELECTRICAL DEVICES

Frederick Joseph Jannett, West Millington, and Jaroslav Mracek, Lawrence Twp., both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 886,981, Oct. 16, 1969, Pat. No. 3,681,139. This application Apr. 5, 1971, Ser. No. 131,393
Int. Cl. B08b 3/08
U.S. Cl. 134—113 9 Claims



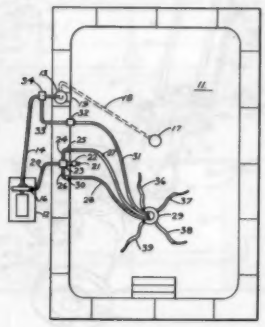
Grid is placed in channels of matrix of beam lead devices cemented with soluble adhesive to plate. Grid-matrix-plate assembly is drawn by vacuum onto first chuck with pattern of apertures at one end. Solvent is forced through first chuck and apertures to dissolve adhesive. Plate is removed and grid-matrix assembly transferred to second chuck which may be porous block operable with vacuum, magnetic block cooperating with magnetic grid, or a combination thereof. Second chuck may also be magnetic block having mesas and cooperating with magnetic grid, non-magnetic block having apertures through mesas operable with vacuum, or combination thereof. After transfer to second chuck, grid is removed and matrix expanded.

3,765,432

POOL CLEANING SYSTEMS

Raymon L. Goodin, 2227 Westoverton Rd., Tucson, Ariz.

Filed Mar. 17, 1971, Ser. No. 125,284
Int. Cl. B08b 9/00; E04h 3/20
U.S. Cl. 134—168 R 6 Claims



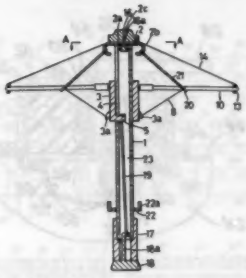
An automatic cleaning system for swimming pools mixes air with the sweeper water jets so that a boiling action ensues and turbulence is promoted. The junction of the several sweeper hoses is in the form of a hollow bell into which air is progressively introduced with the result that the hollow bell and also all of the sweeper hoses migrate slowly toward the surface of the pool, thus cleaning the whole body of water. When the bell has arrived at the surface it discharges the entrapped air, again sinking to the bottom to repeat the cyclic up-and-down motion. Each of the sweeper hoses is composite, and not only discharges an air/water jet from its end, but also is provided with numerous holes along its length, into which suction draws pool water and any dirt it may contain.

3,765,433

DISPOSABLE UMBRELLA

Masaharu Futamura, and Atsutaka Ookuma, both of Nagoya, Japan, assignors to Nakanihon Sangyo Company, Limited, Nagoya, Japan

Filed Dec. 27, 1971, Ser. No. 212,145
Int. Cl. A45b 13/00, 19/00
U.S. Cl. 135—20 R 5 Claims



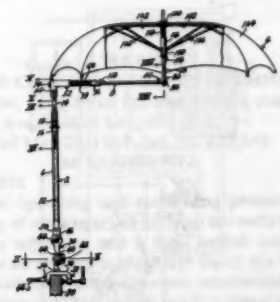
A disposable umbrella comprising a hollow shaft, a sliding member slidably fitted around said shaft, means radially extending from the upper portion of said sliding member and adapted to attach the main ribs of said umbrella to said sliding member, means for keeping said sliding member in its lowered position on said shaft and thereby maintaining said umbrella in its unfurled position while said umbrella is in use, means for restricting the upward movement of said main ribs from their substantially horizontal position while said umbrella is in use, and means for fixing the central part of a water-proof covering for said umbrella to the uppermost portion of said shaft.

3,765,434

UMBRELLA WITH FOLDABLE STAFF

Royal W. Riggs, 2406 Albert Lee, Sedalia, Mo.

Filed Jan. 5, 1972, Ser. No. 215,494
Int. Cl. A45b 11/00
U.S. Cl. 135—20 A 4 Claims



An umbrella having a staff consisting of bottom, intermediate and top sections, the intermediate section being pivotally connected to the bottom section so as to extend either parallel to and coextensively with, or at right angles to the bottom section, and the top section being pivotally connected to the intermediate section so as to extend either coaxially therefrom or at right angles thereto, a standard foldable

canopy mounted at the upper end of the top staff section and extending along the top and intermediate sections when folded, the canopy being operable by a slide movable along the top and intermediate staff sections, and mechanism operable by movement of the slide to secure the respective staff sections in desired relative positions.

3,765,435

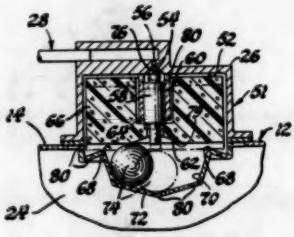
TANK VENT CONTROL UNIT

Manfred P. H. Schlanzky, Frankenmuth, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 10, 1971, Ser. No. 197,298

Int. Cl. F16k *17/36*

U.S. Cl. 137—39 2 Claims



In a vehicular fuel tank venting system, a valve controlling fluid access to the tank vent line is positioned by a float responsive to the fuel level adjacent the tank vent opening and by a weighted ball responsive to vehicle maneuvers which could cause a surge of liquid fuel into the vent line before the float can respond to an increased fuel level.

3,765,436

CONTROL DEVICE FOR TWO METALLIC SALT COMPONENTS IN ELECTROPLATING BATHS

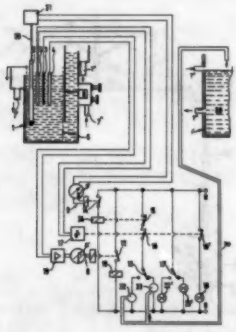
Willy Dziomba; Rainer Beule; Gerhard Wolf, all of Wolfsburg, and Gunter Dreyer, Kl.-Sissbeck, all of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed July 27, 1971, Ser. No. 166,425

Claims priority, application Germany, Aug. 22, 1970, P 20 41 815.9

Int. Cl. G05d *11/08*

U.S. Cl. 137—90 9 Claims



A device for controlling two metallic salt components in an electroplating bath has a sensor for the bath concentration, a sensor for the bath density, two conveyers for supplying respective components into the bath, and limit switch circuits actuating the respective conveyer in response to predetermined indications of the sensors.

3,765,437

HYDRAULIC FREE-JET SERVO-VALVES

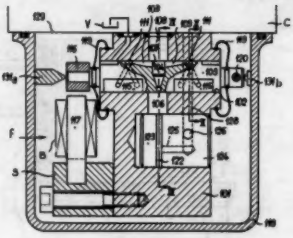
Francois C. Pruvot, and Michel Fayolle, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt, (Haut-de Seine), France

Filed Mar. 24, 1972, Ser. No. 237,702

Claims priority, application France, Mar. 31, 1971, 7111252; Sept. 22, 1971, 7134055

Int. Cl. F15b *11/08*

U.S. Cl. 137—83 10 Claims



In this free fluid jet servo-valve comprising a bored body, and a swivel nozzle for emitting a fluid jet, a device is provided for rotatably driving said nozzle and resilient means constantly urge this nozzle against rotation. At least one receiving nozzle has its inlet orifice registering with the outlet orifice of said emitter nozzle; the output in the receiving nozzle depending on the angular position of the emitter nozzle rigid with a cylindrical drum rotatably mounted in a bore formed in the valve body, a guide device provided with hydrostatic bearings of known type preventing any mechanical contact between said drum and the valve body bore.

3,765,438

FLAG ADJUSTING VALVE HAVING A FACILITATED FLOW

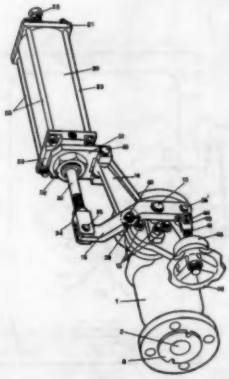
Nicola Di Sciascio, Bari, Italy

Filed Oct. 13, 1971, Ser. No. 188,745

Claims priority, application Italy, Oct. 13, 1970, 30899 A/70

Int. Cl. F16k *31/12*

U.S. Cl. 137—219 12 Claims



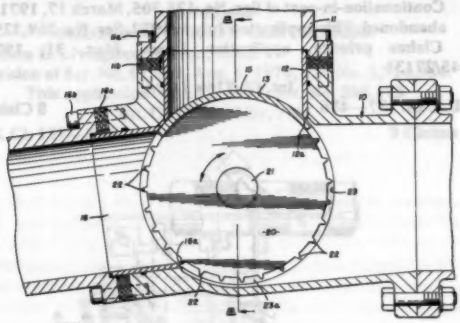
The present invention relates to an adjusting valve with a single seat and a reversible drive which, owing to its particular shape and configuration and to the fact that it has a balanced sliding shutter, allows a less obstructed flow (therefrom the denomination of FLAG valve) and hence a high delivery coefficient, the use of a simple, small servomotor, reversal of the servomotor action without disassembling the valve body, and an easy manual adjustment, both single- and double- acting, as well as the elimination of the necessity for a positioner.

3,765,439

SELF CLEANING SEALED CONCRETE PUMP VALVE

Richard L. Wise, Columbus, Ohio, assignor to The Jolger Machine Company, Columbus, Ohio

Filed Mar. 16, 1972, Ser. No. 235,162
Int. Cl. F16k 5/08, 41/00
U.S. Cl. 137—242 6 Claims



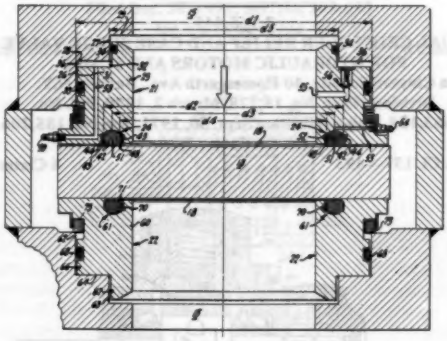
A valve for controlling the inlet to and outlet from a sucking and pumping cylinder of a concrete pump. The valve is of partially cylindrical form and is oscillated through an angle of 180° between inlet-closing position and inlet-opening position where it closes the cylinder beyond the inlet. The valve is carried by rotatable discs that rotate on trunnion shafts, the discs being provided with seals which prevent the concrete from reaching the shafts and their bearings. Also, the discs are provided with lugs which serve to agitate and break-up the ambient concrete as they rotate.

3,765,440

VALVE CONSTRUCTION

Marvin H. Grove; Kee W. Kim, and Lyle R. Van Aradale, all of Houston, Tex., assignors to M & J Valve Company, Houston, Tex.

Filed May 5, 1971, Ser. No. 140,525
Int. Cl. F16k 3/02, 5/06
U.S. Cl. 137—246.22 4 Claims



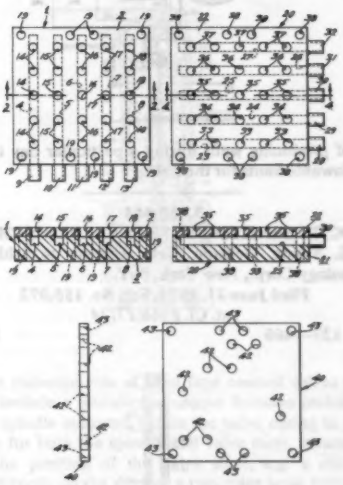
A valve construction (gate or ball) having at least one sealing assembly which normally provides a fluid-tight seal between the body and the valve surface of the gate or ball. The sealing assembly includes a metal ring having sealing means formed of resilient material which engages the valve surface. The ring can be jacked hydraulically against the valve surface to establish a secondary seal. During periods when jacking forces are not applied, the assembly presents a fluid pressure area acted upon by the upstream line pressure whereby the sealing means is urged by line pressure against the valve surface. One embodiment has means for introducing sealing lubricant to the sealing areas of the valve surface. Also one embodiment has means for detecting leakage past the sealing assembly.

3,765,441

FLUID MANIFOLDING ARRANGEMENT

Robert C. C. Chang, Wayne, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed Mar. 22, 1972, Ser. No. 237,195
Int. Cl. F16d 1/00
U.S. Cl. 137—271 3 Claims



A group of fluid input connectors and a group of fluid output connectors are coupled together to provide a matrix of paired, aligned ports, one port of each pair communicating with one of the input connectors and the other port of the pair communicating with one of the output connectors. Programming means couples together the individual respective ports of preselected pairs, and isolates from each other the individual respective ports of the remaining pairs.

3,765,442

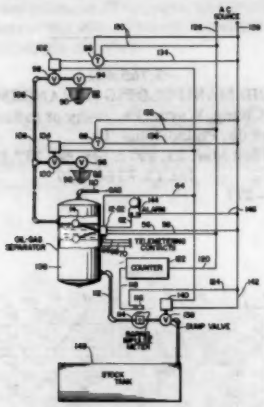
SYSTEM FOR CONTROL OF OIL WELL PRODUCTION

Henry D. Nettles, 1806 Swan St., and Bazzell, John S., 1604 W. Marshall Ave., both of Longview, Tex.

Filed May 22, 1969, Ser. No. 826,848
Int. Cl. G05d 9/12
U.S. Cl. 137—391 4 Claims

A system for operating and controlling production of oil from a plurality of wells in which oil from the wells is passed to an oil and gas separator and a float switch mechanism is mounted in the oil and gas separator in which the float of the float switch contacts a normally-open microswitch, when it reaches its uppermost limit, which sends a signal to an alarm and also operates appropriate valves which shut off the flow of oil from the wells and pass oil from the oil-gas separator to an appropriate storage tank, a holding relay holds this particular signal until the float reaches its lowermost position, the float contacts a normally-closed microswitch, when it reaches its lowermost limit, which sends a signal which releases the alarm and control condition and the holding relay holds this signal until the float again reaches its upper position. The system

may also be provided with an automatic counting system to count the total number of barrels produced from the entire



group of producing wells during a particular day to thereby meet allowable limits for the field.

3,765,443

VELOCITY SENSITIVE SAFETY VALVE MECHANISM

David E. Young, Houston, Tex., assignor to Schlumberger Technology Corp., New York, N.Y.

Filed June 21, 1971, Ser. No. 155,072
Int. Cl. F16k *17/24*
U.S. Cl. 137—460 19 Claims

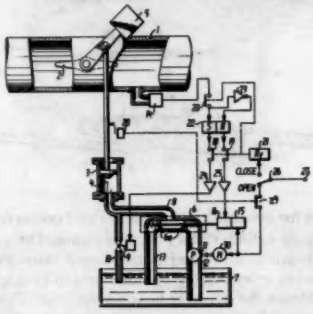
A velocity sensitive safety valve mechanism, according to the present invention, may include a ball valve assembly that is rotated between open and closed positions to control the flow of production fluid responsive to velocity and pressure conditions of the production fluid. For the purpose of controlling opening and closing of the safety valve mechanism a valve actuator sleeve is provided that supports the valve ball for rotation and is biased toward a position achieving closure of the ball element. Latching means is provided to restrain the actuating sleeve in a position causing the ball or valve element to be maintained in the open position thereof. Means may be provided to function, responsive to a predetermined pressure drop within the conduit upstream of the safety valve mechanism to unlatch the actuator locking mechanism when the flow of production fluid reaches a predetermined maximum limit. Unlatching of the actuator locking mechanism allows the valve element to be biased to its closed position ceasing the flow of production fluid. Opening of the safety valve mechanism and resetting of the unlatching mechanism may be achieved simply by introducing sufficient pressure into the production conduit, above or downstream of the safety valve, to exceed reservoir or casing pressure externally of the safety valve mechanism.

3,765,444

CONTROL SYSTEM FOR OPENING AND CLOSING A BUTTERFLY VALVE

Yokinobu Kosugi, 995 Kamiwada, Yamato-shi, Japan

Continuation-in-part of Ser. No. 125,305, March 17, 1971, abandoned. This application July 6, 1972, Ser. No. 269,329
Claims priority, application Japan, Mar. 31, 1970, 45/27131
Int. Cl. F16k *31/36*
U.S. Cl. 137—486 8 Claims



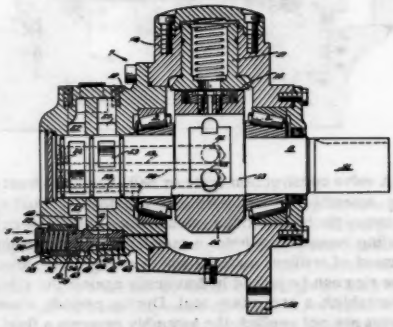
A control system for opening and closing a butterfly valve rotatably mounted in a fluid channel is provided. The piston of a servo-motor is operatively connected to the butterfly valve through a weight member and will close the butterfly valve at either a rapid or a slow speed in accordance with the rate of flow of the fluid detected within the channel. The rapid or slow rate of closure is obtained by coupling a main pipe line and a manifold pipe line to a fluid contained tank and to the cylinder of the servo-motor. The main pipe line and the manifold pipe line are separately operative in accordance with valves attached thereto and the rate of closure control is provided by having the cross-sectional area of the main pipe line larger than that of the manifold pipe line so that a different rate of exhaustion of the fluid within the servo-motor will occur depending which line is utilized.

3,765,445

DUAL CROSSOVER RELIEF AND CASE SURGE VALVE FOR HYDRAULIC MOTORS AND PUMPS

John Clayson Schultz, 40 Homesgarth Ave., Buffalo, N.Y.

Division of Ser. No. 15,778, March 2, 1970, Pat. No. 3,663,124. This application Sept. 30, 1971, Ser. No. 185,206
Int. Cl. F16k *17/26*
U.S. Cl. 137—493 6 Claims



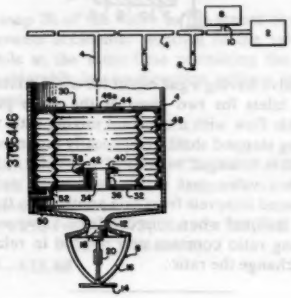
A valve is provided which will automatically respond to relieve overload hydraulic pressures in a hydraulic operating

device such as a motor or pump, being mounted directly in the housing of the device and operatively communicating with the hydraulic operating circuit to bypass hydraulic pressure automatically when an overload in the device is sensed by the valve.

3,765,446
DOUBLE RATE FLOW CONTROLLER

William L. Livingston, Sharon, Mass.

Division of Ser. No. 61,801, Aug. 6, 1970, Pat. No. 3,714,964.
This application Sept. 12, 1972, Ser. No. 288,373
Int. Cl. F16k *13/04, 1/44*
U.S. Cl. 137—504 **9 Claims**

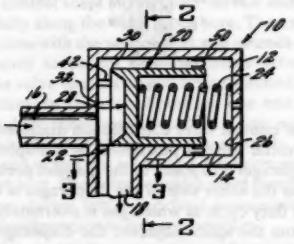


A double rate flow controller including a means for permitting fluid flow at a first high flow rate, a means for reducing the first flow rate to a second lower flow rate and a means for regulating the volume of water passing through the flow controller during the high flow condition before the high flow rate is terminated and the low flow rate begins.

3,765,447
METERING VALVE FOR REGULATING THE FLOW OF CONTAMINATED FLUIDS

Richard Henry Cornell, Marblehead, Mass., assignor to General Electric Company

Filed Dec. 20, 1971, Ser. No. 209,693
Int. Cl. F16k *15/02*
U.S. Cl. 137—538 **8 Claims**

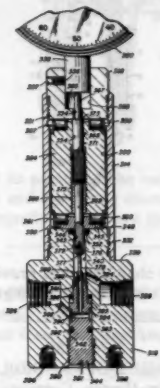


A flow metering valve for regulating the flow of fluids contaminated with particulate matter includes a valve housing with a translatable valve member disposed within the housing and space apart from the interior walls of the housing by guide means which minimize the contacting areas of the moving surfaces, substantially reducing the risk of particulate matter being drawn therebetween and seizing the moving parts. Metering ports are unevenly arranged around the housing such that the flow of pressurized fluid through the housing operates to load the valve member into tight engagement with the areas immediately surrounding the metering ports so as to provide substantially zero clearance therebetween, and further aid in prohibiting the intrusion of contaminants between the moving surfaces.

3,765,448
FLOW CONTROL VALVE

R. Jules Dussia, Chatham, N.J., assignor to Chatham Precision, Inc., Chatham, N.J.

Filed Apr. 6, 1971, Ser. No. 131,658
Int. Cl. F16k *37/00, 5/10*
U.S. Cl. 137—553 **13 Claims**



Multiple embodiments of fluid flow control valves are disclosed to include a plurality of unique features including; an operating spindle mounted within the valve casing to provide protection for both the spindle and valve stem, means for indicating the position of the valve stem, e.g. a dial guage mounted directly on the stem or a two-stage scale mounted on the stem and on the valve operating spindle, a stem structure which accommodates flow path sizing as well as positive no-flow sealing without the use of soft seals, adjustment structure which eliminates tolerance problems resulting from manufacturing, and replaceable flow control apparatus to permit use of a single basic valve to provide flow control in a wide range of circumstances. Certain of the above-listed features are useful in embodiments of the valve suitable for ordinary known uses and others are particularly useful in precision metering valves of the type which are used to meter accurately small amounts of fluid across a high pressure drop or small amounts of fluid from atmosphere into a hard vacuum.

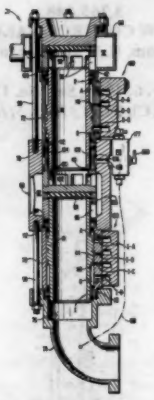
3,765,449
HYDRAULICALLY POWERED PUMP HAVING A PRECOMPRESSION FUNCTION

Clinton W. Cole, P.O. Box 1431, Duncan, Okla.

Division of Ser. No. 886,687, Dec. 19, 1969, Pat. No. 3,650,638. This application Dec. 3, 1971, Ser. No. 204,586
Int. Cl. F15b *13/02*
U.S. Cl. 137—596.12 **10 Claims**

An hydraulically powered multiplex pump having at least three pumping units, each operable in a cycle including suction, precompression and discharge phases, with the cycles being out of phase with one another, whereby simultaneous performance of these functions results in a substantially constant pressure and flow of both the pumped fluid and the power fluid. Separate power and cycle control circuits, which may employ different fluids, are provided. Control valve assemblies, each including two sleeve valves communicating with a common chamber, are operated by the control circuit fluid to condition power circuit flow for the various phases of the pumping cycle. The power end of the pumping units in-

cludes power cylinders which may be fluid interconnected at their rod ends so that operations in each power cylinder affect



functions in the other chambers, and provision is made for automatic correction of errors in stroke length.

3,765,450

COMBINED SHUT-OFF AND DRAIN VALVE

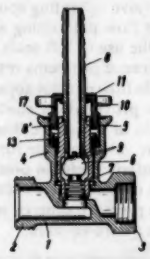
Helmut Meges, Neheim-Husten, Germany, assignor to Metallwerke Neheim Goeke & Co. KG, Neheim-Husten, Germany

Filed Mar. 27, 1972, Ser. No. 238,150

Claims priority, application Germany, Mar. 27, 1971, P 21 15 024.3

Int. Cl. F16k *11/10*

U.S. Cl. 137—596.2 10 Claims



A combined shut-off and drain valve in which a valve housing is provided between the inlet and the outlet end thereof with a valve seat and a socket axially aligned with the valve seat. A tubular valve member is axially aligned with the valve seat. A tubular valve member is axially movable in the socket between an open position and a closed position in which one end of the tubular member engages the valve seat to prevent flow of fluid between the inlet and the outlet. The tubular valve member is formed between the ends thereof with a second valve seat and a second valve member located between the one end of the tubular valve member and the second valve seat is normally spring biased in engagement with the latter. Preferably a tubular member is insertable through the other end of the tubular valve member for moving the second valve member away from the second valve seat so that fluid passing from the inlet into the interior of the valve housing may be drained therefrom regardless whether the tubular valve member is in the open or the closed position.

3,765,451

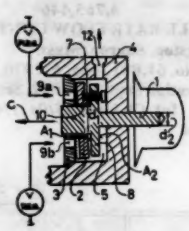
MIXING VALVE FOR TWO GASES

Lennart Valentin Andersson, 209, 136 66 Handen, Stockholmsvagen, Sweden

Filed Nov. 15, 1972, Ser. No. 306,722

Int. Cl. F15c *3/00*

U.S. Cl. 137—625.4 9 Claims



A mixing valve having a gas outlet for a gas mixture and two separate gas inlets for two gases at the same pressure can deliver variable flow with a constant mixing ratio by employing a revolving stepped shaft, reciprocally mounted in a valve housing which is arranged to control a circular valve element in relation to a valve seat in which the two gas inlets are located at spaced intervals from one another, so the valve element can be inclined when raised off the valve seat to maintain the mixing ratio constant and rotated in relation to the valve seat to change the ratio.

3,765,452

PROPORTIONAL CONTROL VALVE FOR GAS BURNERS

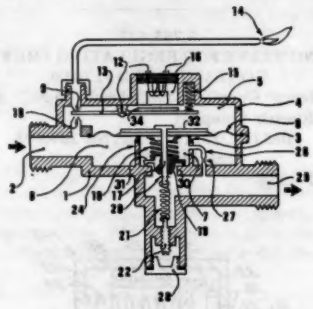
Jean-Claude Charron, Saint-Maur, France, assignor to Saunier Duval, Paris, France

Filed Feb. 28, 1972, Ser. No. 229,765

Claims priority, application France, Mar. 2, 1971, 7107086

Int. Cl. F16k *31/365*

U.S. Cl. 137—630.15 6 Claims



In the burner control valve construction disclosed herein, a modulating throttle valve is positioned by a diaphragm. One side of the diaphragm is exposed to the gas inlet pressure while the pressure on the other side of the diaphragm is controlled by varying the duty cycle at which gas is alternately admitted and vented from the space adjacent the diaphragm, the admitting and venting of gas being controlled by an electromagnet energized by a suitable squarewave signal of adjustable duty cycle.

3,765,453

FREEZE-DRYING VACUUM VALVE

Martin C. Parkinson, Nyack, N.Y., assignor to Dritron, Incorporated, West Nyack, N.Y.

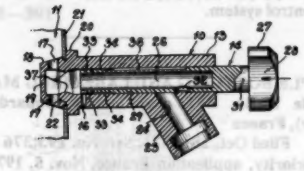
Filed Oct. 31, 1972, Ser. No. 302,619

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.24 10 Claims

An all resilient vacuum valve for coupling material to be dehydrated to a freeze dryer in which the valve includes an

outer elastomer tubular member for interconnecting the material to the freeze dryer and a stem slidably mounted in the tubular member for opening and closing the valve. The tubular member at its juncture with the freeze dryer is provided with a precision undercut, so precise that it permits not only a



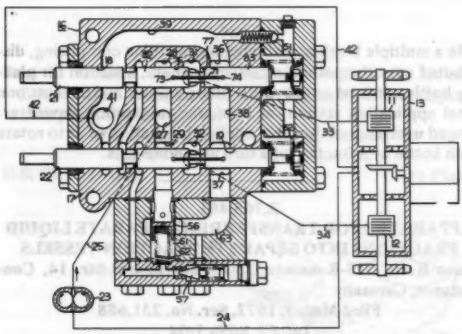
convenient snap fit of the valve to the freeze dryer chamber but also prevents accidental removal of the valve from the chamber while at the same time permitting the valve to be stressed considerably in any direction without impairing the vacuum system.

3,765,454

PRESSURE GRADUATED CONTROL VALVE

David F. Carl, Springfield, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 1, 1973, Ser. No. 328,760
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.68 12 Claims



An axial slot with enlarged end openings is formed in a valve spool of a control valve having inlet, service and exhaust ports spaced axially along the valve spool bore. The axial slot always communicates with the service port and extends axially a sufficient distance to permit communication between all three ports as the valve spool is moved from its closed position to its open position. In the closed position one end of the slot is blocked and the other opens into the exhaust port. In the open position said one end of the slot is open to the inlet port and the other end of the slot is blocked from communication with the exhaust port. The valve provides rapid pressure rises in the service port during initial and final movements of the spool from its closed position to its open position.

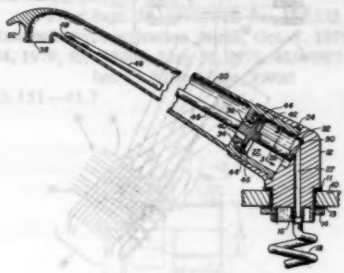
3,765,455

FLEXIBLE SPOUT OPERATED FAUCET

James H. Countryman, 3324 Trailon, Dayton, Ohio

Filed Aug. 22, 1972, Ser. No. 282,762
Int. Cl. F16k *11/14*
U.S. Cl. 137—625.4 12 Claims

A faucet is provided with a metering valve for controlling the mixing ratio of hot and cold water entering a mixing chamber, and a tilt valve for controlling, from shut off to full flow, the volume of water passing through the mixing chamber and into a flexible spout. Both valves are controlled by an elongated valve stem which extends into the spout. Total water flow as well as the relative mixture of hot and cold water is controlled by flexing the spout which then acts against the



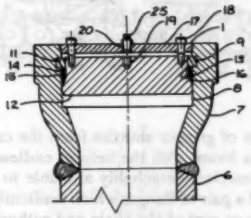
valve stem to adjust its position. The only moving parts comprise the valve stem and the gating elements of the valves, all of which may be integrally formed as a single piece.

3,765,456

CHEMICAL CLEANING LINE CONNECTOR

Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor Equipment Company dba Anchor Valve Company, Hayward, Calif.

Filed Apr. 17, 1972, Ser. No. 244,643
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 3 Claims



This invention relates to a closure structure provided upon an end of a tube as in a boiler or the like as in one heated by a fossil or atomic fuel. The closure can be removed readily and a line connected to the boiler tube so that a chemical solution can be passed through the series of boiler tubes to flush them.

3,765,457

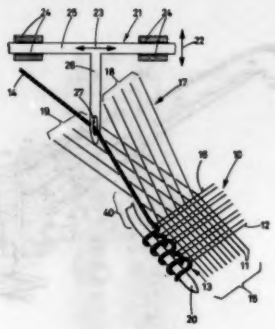
METHOD OF PRODUCTION OF A ZIPPER BY WEAVING

Friedrich Glindmeyer, Stolberg; Wilhelm Hennenberg, Alsdorf, and Karl Limpens, Stolberg, all of Germany, assignors to Firma William Prym-Werke KG, Stolberg, Germany

Filed Apr. 14, 1971, Ser. No. 133,791
Claims priority, application Germany, Apr. 14, 1970, P 20 17 739.3
Int. Cl. D03d *41/00*
U.S. Cl. 139—35 7 Claims

A method of the production of a slide fastener by weaving, which comprises the steps of bending over a continuous profile strand about a loop forming core within the range of the weaving point for the formation of a row of coupling members, and guiding back and forth the profile strand of synthetic material as a warp thread shedding through the weaving plane.

Thereby the profile strand is guided in a cycle, at some points reversing about the loop forming core, and binding the profile



strand within the range of the rearward return points by means of at least one woof thread loop.

3,765,458

GRIPPER SHUTTLE CARRIER

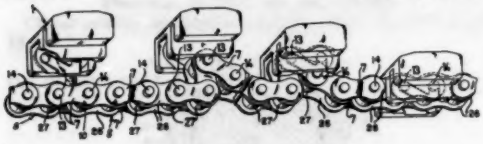
Georg Ziegler, Solothurn, and Erwin Pfarrwaller, Winterthur, both of Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 9, 1972, Ser. No. 233,262

Claims priority, application Switzerland, Mar. 16, 1971, 003846/71

Int. Cl. D03d *47/24*

U.S. Cl. 139—126 **2 Claims**



For the return of gripper shuttles from the catching to the picking side of a loom, with the help of endless roller chain, gripper shuttle carriers detachably affixable to the chain include a web and a pair of flanges which resiliently engage with side bars, rollers or pins of the chain and without the removal of any links from the chain.

3,765,459

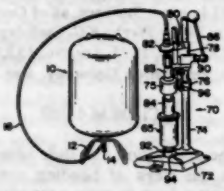
SPRAYING APPARATUS AND MEANS FOR REFILLING SPRAY CANS

Albert R. Morse, Beachwood, Ohio, assignor to IMS Company, Cleveland, Ohio

Division of Ser. No. 812,270, April 1, 1969, Pat. No. 3,592,390. This application Nov. 10, 1970, Ser. No. 88,319

Int. Cl. B65b *3/04, 31/00*

U.S. Cl. 141—20 **11 Claims**



A combination of a self-powered supply container and a hande gun for spraying parting material onto the surfaces of the molds. Fluid parting material under pressure exits from the lowermost portion of the container when in an operating position into a flexible conduit which conducts the fluid to a manually operable hand gun having a conventional spray head and valve assembly clamped to a cylindrical body with a surge or vapor chamber therein. The actuation of the valve assembly also may be by a pneumatic or solenoid, automatic or semi-automatic control system.

3,765,460

MULTIPLE BOTTLING AND LABELLING MACHINES

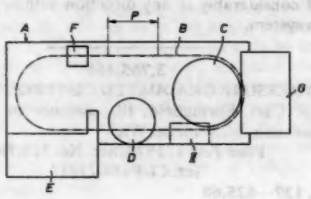
Jean Emile Bedin, 251 rue Camille Godard, Bordeaux (Gironde), France

Filed Oct. 28, 1971, Ser. No. 193,376

Claims priority, application France, Nov. 5, 1970, 7039830

Int. Cl. B65b *3/04*

U.S. Cl. 141—98 **6 Claims**



In a multiple bottling and labelling machine comprising, distributed over the path of a conveyor chain, a station for placing bottles on said conveyor, a filling station and at least one label application station, at least one orientation device arranged upstream of the label application station so as to rotate each bottle by a fraction of a turn around its axis.

3,765,461

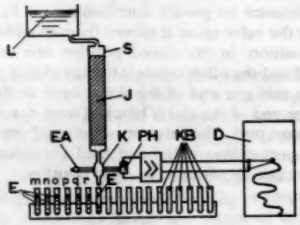
APPARATUS FOR TRANSFERRING SEPARATE LIQUID FRACTIONS INTO SEPARATE FRACTION VESSELS

Klaus Keck, 775-Konstanz, Jacob Burckhardt-Str. 14, Constance, Germany

Filed Mar. 3, 1972, Ser. No. 231,688

Int. Cl. B65b *3/04*

U.S. Cl. 141—234 **1 Claim**

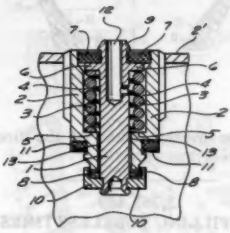


Apparatus for transferring a plurality of liquid fractions having differing characteristics discharged from a single source which includes a multipath valve connected between the source and a series of receptacles, with a controller which senses the liquid discharged and operates the valve to direct the various fractions into the receptacles in accordance with the characteristics of the fraction being discharged.

3,765,462
FILLING VALVE FOR GAS-FUELED LIGHTER

Robert Raymond Hocq, Boulogne-Billancourt, France, assignor to Societe Franco-Hispano-Americoine, (Francispam) Saint-Gratien, France

Filed Apr. 21, 1971, Ser. No. 136,092
Int. Cl. B65b *3/04*
U.S. Cl. 141—301 7 Claims

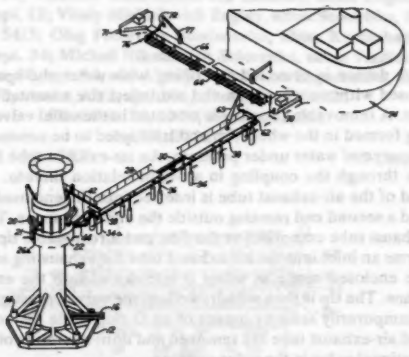


The invention relates to a filling valve, particularly for filling gas-fueled lighters, provided with an expansion chamber into which the liquefied gas is fed directly from the filling bottle, the outlet of said chamber being arranged substantially opposite to the inlet, in order to obtain a sufficiently important localised cooling effect for causing said valve to operate to rapidly fill the lighter.

3,765,463
OFFSHORE TERMINAL

Paul L. Gassett, Houston, Tex., and Wilfred R. McLeod, Butte, Mont., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 22, 1971, Ser. No. 126,661
Int. Cl. B63b *21/50, 21/00, 35/00*
U.S. Cl. 141—388 11 Claims

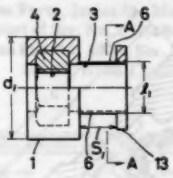


An offshore terminal for loading tanks comprising a bottom-supported column surrounded by a floating collar. Standpipes in the column for connection with transfer lines to shore are connected by flexible lines to the collar. A floating station flexibly connected to the collar extends radially from the collar to support rigid pipes. An elongated powered boom having a power unit at each end supports rigid pipes which are connected by flexible hoses to the manifold of a tanker at one end and at the other end to the pipes supported by the floating station. The wide spacing apart of the power units on the powered boom facilitates the powered boom holding the tanker from swinging and picking up momentum that might damage the terminal.

3,765,464
NUT FOR FIXING AND ELECTRIC INSTRUMENT AND FIXING MEANS OF THE SAME

Kenichi Hasegawa, 10904, Kohunbun-cho, Ichikawa-shi, Chiba-ken, Japan

Filed Sept. 28, 1971, Ser. No. 184,533
Claims priority, application Japan, Oct. 7, 1970, 45/99644; Dec. 24, 1970, 45/140407; May 31, 1971, 46/44957
Int. Cl. F16b *13/06, 39/00*
U.S. Cl. 151—41.7 4 Claims

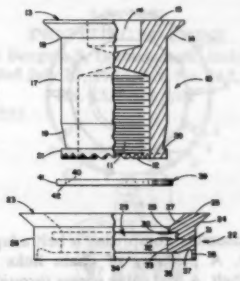


A fastening nut for electric instruments in which a nut of metal is set into one end of a cylinder of synthetic resin in such a manner that its screw hole is exposed in the center of the said cylinder and wherein the other end of the cylinder is equipped with a parallel cut slit. The device is mated with a bolt which is passed through the electric instrument panel and the slit of the said nut is positioned in a fixing groove or rail of the instrument board to secure the instrument thereto.

3,765,465
RETRACTABLE CAPTIVE FASTENER

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Filed Jan. 5, 1972, Ser. No. 215,523
Int. Cl. F16b *41/00*
U.S. Cl. 151—69 7 Claims



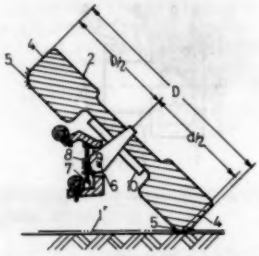
A captive nut device including a sleeve having a head at one end and a thin-walled portion at the other adapted to be bent outwardly to cooperate with the head in holding the sleeve to a workpiece, the sleeve having an annular groove intermediate its ends which receives a resilient split ring, the ring bearing against a nut received in the sleeve, the nut having a tapered surface extending to a shoulder at one end which is engageable by the retainer ring to limit movement in one direction, the retainer ring producing a force component as a result of its engagement with the tapered surface to hold the shoulder against the retainer ring, the nut end being fully retracted within the sleeve when the retainer ring so engages the shoulder.

3,765,466

CONTROLLING METHOD IN A TRANSPORTING MACHINE SUCH AS AIRPLANE, AUTOMOBILE, ETC. AND ITS SYSTEM

Yasuo Tsuruta, 12-22, 3-chome, Nakamagome, Ota-ku, Tokyo, Japan

Filed Sept. 23, 1971, Ser. No. 183,039
Claims priority, application Japan, May 1, 1971, 46/29171
Int. Cl. B60c *11/14*
U.S. Cl. 152—210 **5 Claims**



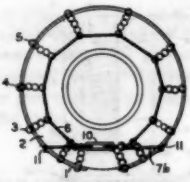
A controlling method in a transporting machine such as airplane, automobile, etc. adapted to be obtainable a different friction resistance for a same running surface with an identical tire bringing its surface portion with a different friction coefficient in contact with the ground by means of changing an angle of a tire to a running ground surface.

3,765,467

TIRE CHAIN MEANS

Thomas E. Dolan, 2568 Parkview Pl., Baldwin, N.Y.

Filed June 12, 1972, Ser. No. 262,144
Int. Cl. B60c *27/06*
U.S. Cl. 152—219 **2 Claims**



A tire chain assembly comprising a belt adapted to extend around the tire. A plurality of chain links are integrally mounted on the belt. A first cable passes through the end links of said chains on one side of the tire. A second cable passes through the end links of said chains on the other side of said chains. A turnbuckle secures the ends of said cables when the belt and chain assembly is mounted on a tire.

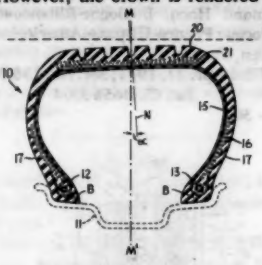
3,765,468

ASYMMETRICAL TIRE CASING

Henri Verdier, Beauregard-L' Eveque, France, assignor to Compagnie Generale des Etablissements Michelin, raison social Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Feb. 23, 1971, Ser. No. 117,936
Claims priority, application France, Feb. 23, 1970, 7006451
Int. Cl. B60c *3/00*
U.S. Cl. 152—352 **3 Claims**

A tire casing has a crown the structure and thickness of which are symmetrical with respect to a bisecting surface normal thereto. However, the crown is rendered asymmetrical



with respect to the median plane of the tire by forming therewith an angle less than 90°.

3,765,469

DEVICE FOR FILLING TUBELESS TIRES WITH A LIQUID

Daniel LeJeune, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison social Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France

Filed Feb. 3, 1972, Ser. No. 223,173
Int. Cl. B60c *29/00*; F16k *21/00*
U.S. Cl. 152—415 **6 Claims**

A device is provided for filling with water the space enclosed within a wheel rim and a tubeless tire mounted on the rim. A removable coupling is mounted in the usual valve opening formed in the wheel rim and is adapted to be connected to a source of water under pressure. An air-exhaust tube is slidable through the coupling in air-tight relation thereto. A first end of the air-exhaust tube is inserted into the enclosed space and a second end remains outside the enclosed space. The air-exhaust tube comprises at the first end a removable tip which forms an inlet into the air-exhaust tube for exhausting air from the enclosed space as water is introduced into the enclosed space. The tip is then withdrawn into the valve opening, which it temporarily seals by means of an O-ring while the coupling and air-exhaust tube are removed and until mounting of a conventional valve in the valve opening.

3,765,470

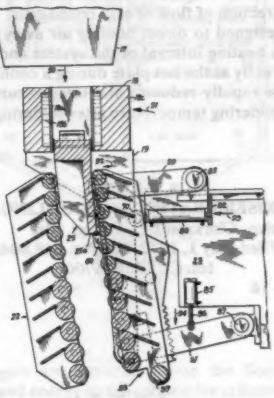
CONTINUOUS CASTING MACHINE

Horst Huber, Roselle Park, N.J., assignor to Sergio J. Castagnoli, c/o Robert E. Moss, New York, N.Y.

Filed July 14, 1971, Ser. No. 162,383
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **14 Claims**

A continuous casting machine having an arcuate channel into which molten metal is poured. The metal is guided through the channel and then straightened as it exits from the bottom of the channel and onto a horizontal conveyor. Two pinion-driven racks are provided at the sides of the arcuate channel, each rack having a head for gripping one of two arms of a starting plug which is inserted at the top of the channel

while the flow-through mold at the top of the channel is moved out of the way. The racks are then driven so that the starting plug leads the casting down the channel, the rack heads being separated from the starting plug automatically at the bottom of the channel so that the racks can be returned



immediately to the top of the channel while the casting continues. In this manner, as soon as the tail end of a casting exits the mold, the mold may be moved out of the way, a new plug may be inserted at the top of the channel with its arms gripped by the two rack heads, and a new casting may begin immediately.

3,765,471

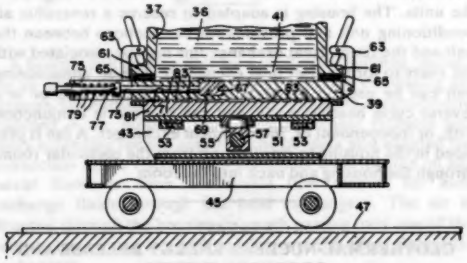
SYSTEM AND METHOD OF ELECTROSLAG REMELTING OF METALS AND ALLOYS

Boris Evgenievich Paton, ulitsa Kotsyubinskogo, 9, apt. 21; Boris Izrailevich Medovar, Boulevard Lesi Ukrainki, 2, apt. 8; Jury Vadimovich Latash, Vozduhoflotsky Prospekt, 81, apt. 14; Vladimir Konstantinovich Lebedev, ulitsa Engelsa, 25, apt. 12; Vitaly Michailovich Baglay, ulitsa Semashko, 10, apt. 54/3; Oleg Petrovich Bondarenko, ulitsa Kreshchatik, 15, apt. 34; Michail Nikolaevich Sidorenko, ulitsa Vladimirskaya, 98, apt. 54, and Alexey Georgievich Bogachenko, ulitsa Milyutenko, 15/2, apt. 141, all of Kiev, U.S.S.R.

Filed Feb. 19, 1970, Ser. No. 12,601

Int. Cl. B22d *27/02*

U.S. Cl. 164—252 **49 Claims**



In an electroslag remelting process, electrode means preferably comprising at least two electrodes are immersed in a molten slag bath in a mold and AC power is applied between the electrodes. An electric connection is provided between the bottom plate of the mold and a center tap of the power supply to insure equal melting rates of the electrodes of the electrode means. Means are provided to improve the electrical connection between the sidewalls and the bottom plate of the mold and between the bottom plate and the ingot which is formed in the mold. A plurality of water channels directly beneath the bottom plate provides improved cooling thereof. Means are provided for moving the mold horizontally in two dimensions with respect to the electrodes. Means are provided to prevent the electrodes from flying apart when current first starts to flow through the electrodes. Ingots of different sizes can be formed using electrodes which are uniform in size.

3,765,472

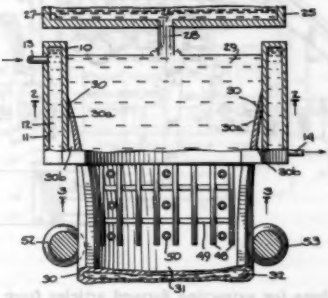
IMPROVEMENTS IN SUPPORTING SLABS DURING CONTINUOUS CASTING

Irving Rossi, Dunros Farm, James St., Morristown, N.J.

Continuation-in-part of Ser. No. 111,488, Feb. 1, 1971. This application Feb. 11, 1971, Ser. No. 114,592

Int. Cl. B22d *11/12*

U.S. Cl. 164—282 **6 Claims**



A slab shaped strand of metal is continuously cast by pouring metal into the top of a tubular mold and withdrawing a partially solidified strand from beneath the mold. Grid strips extend down from the bottom of the mold and press against the flat sides of the strand to maintain concavities therein during the initial cooling period. The grid strips then terminate; and edge rolls then press inwardly against the narrow edges of the slab to maintain the sidewall concavities.

3,765,473

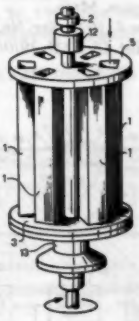
INGOTTING MACHINE

Ugo Brusa, via Borgnia 9, Domodossola, Italy

Filed July 23, 1971, Ser. No. 165,542

Int. Cl. B22d *5/02*

U.S. Cl. 164—325 **27 Claims**



The invention concerns an ingotting machine comprising a certain number of double-walled ingot moulds cooled by water circulation and provided with means for the extraction of semisolid billets of metal, particularly steel. Preferably the ingot moulds are disposed rotatable around an axis and the machine comprises an indexing mechanism. In alternative the

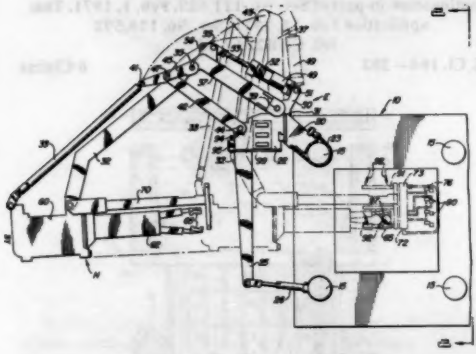
ingot moulds are disposed in a row and a container of melted metal moves from one to another to fill said moulds.

3,765,474

ARTICLE FORMING MACHINE AND EXTRACTOR

Charles A. Burton, Columbus, Ohio, assignor to Rimrock Corporation, Columbus, Ohio

Filed June 14, 1971, Ser. No. 152,763
Int. Cl. B22d 29/04
U.S. Cl. 164—344 12 Claims



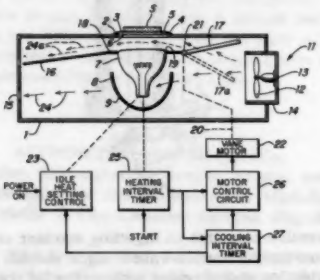
A machine for extracting formed articles from an article forming machine, such as castings from a die casting machine. The extractor is mounted on the article forming machine above the article forming area and has pivotally connected arms that extend transversely of the article forming area and carry an extractor head. The arms swing the extractor head into and out of the article forming area in synchronism with article forming cycles of the machine. Formed articles are grasped by means on the extractor head, and released when the extractor head is retracted from the forming area. The extractor head also carries means by which the article forming members may be cleaned and lubricated as the extractor head is retracted. Sensing means are provided on the extractor head to sense incomplete articles.

3,765,475

APPARATUS FOR SOLDERING THICK FILM SUBSTRATES

Donald F. Hooper, Ben Lomond, Calif., assignor to Iteck Corporation, Lexington, Mass.

Filed June 4, 1971, Ser. No. 149,962
Int. Cl. F21b 29/00
U.S. Cl. 165—12 17 Claims



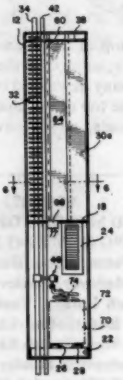
Heating apparatus for rapidly soldering thick film electrical substrates without overheating them and without subjecting them to damaging vibrations. The heating apparatus includes an enclosed housing having a support plate thereon upon which the substrate to be soldered is positioned. A source of radiant heat positioned within the housing is provided to heat the substrate to the desired soldering temperature. Also included in the apparatus is a fan assembly for blowing cooling air through the housing and a deflector assembly for controlling the direction of flow of said cooling air. The deflector assembly is designed to direct cooling air away from the hot plate during a heating interval of the system and to direct the cooling air directly at the hot plate during a cooling interval of the system for rapidly reducing the temperature of the substrate below soldering temperature after soldering has been effected.

3,765,476

TWO-RISER HEATING AND COOLING UNIT

James J. Whalen, Clarkson Dr., Fulton, Md.

Filed May 1, 1972, Ser. No. 248,804
Int. Cl. F25b 29/00
U.S. Cl. 165—16 15 Claims



A heating and cooling unit for installation in a building and including a pair of vertically extending risers extending for the length of a housing and adapted for connection to risers of corresponding units located on adjacent floors to form a continuous flow circuit for a heat exchange medium through all of the units. The housing is adapted to receive a reversible air conditioning unit and provides for connections between the unit and the risers. Heat exchange fins may be associated with the risers to form a riser heat exchanger. The air conditioning unit can be used in a standard cycle cooling mode or in a reverse cycle heating mode, and can be used in conjunction with, or independent of, the riser heat exchanger. A fan is provided in the housing to circulate air from the particular room, through the housing and back into the room.

3,765,477

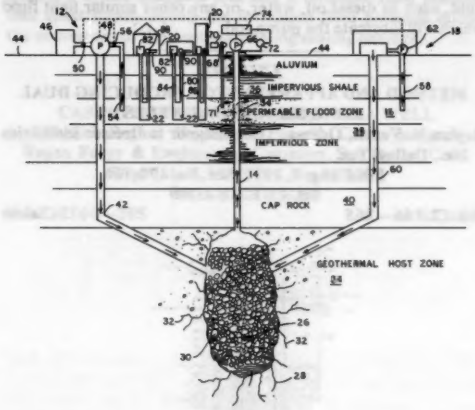
GEOTHERMAL-NUCLEAR ENERGY RELEASE AND RECOVERY SYSTEM

Allen T. Van Huisen, 29456 Indian Valley Rd., Rolling Hill Estates, Calif.

Filed Dec. 21, 1970, Ser. No. 99,898
Int. Cl. F28d 21/00
U.S. Cl. 165—45 11 Claims

A system for mining geothermal energy utilizing the detonation of a deeply buried nuclear device such as nuclear fusion bomb or a nuclear fission bomb to produce a chimney cavity and fractures in a rocky geothermal stratum. Heat exchange

fluid is introduced into the cavity and is transferred to flood a higher permeable stratum closer to the surface of the earth.



Heat exchangers are introduced into the flooded zone to transfer heat and energy to the surface for utilization.

3,765,478

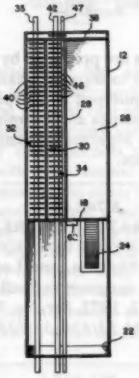
FOUR RISER HEATING AND COOLING UNIT

James J. Whalen, Clarkson Dr., Fulton, Md.

Filed May 1, 1972, Ser. No. 248,806

Int. Cl. F25b *29/00*

U.S. Cl. 165—50 **11 Claims**



A heating and cooling unit for a multistory building, including an elongated housing containing a fan for circulating air through the housing, and two heat exchangers longitudinally disposed in the housing. Each heat exchanger includes two risers extending for the length of the housing and adapted for connection to the risers of corresponding units located on adjacent floors to form continuous flow circuits for heat exchange fluids through the heat exchangers. The air is directed through the housing in a path passing over one of the heat exchangers, or in a path passing over the other of the heat exchangers.

3,765,479

LIQUID COOLED ENGINE

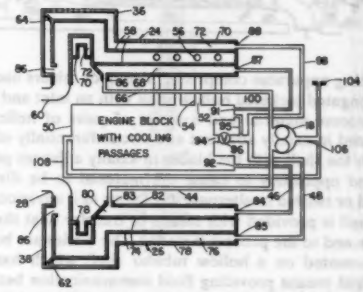
Robert F. Fish, 877 W. 17th St., Costa Mesa, Calif.

Filed Jan. 28, 1971, Ser. No. 110,727

Int. Cl. F28f *27/02*

U.S. Cl. 165—51 **11 Claims**

A novel engine cooling system which incorporates a special heat exchanger. The heat exchanger replaces the conventional exhaust inlet or inlet manifold of an internal combustion engine. The heat exchanger includes an exhaust conduit having an inlet portion, an intermediate portion and an outlet portion. Encompassing walls define two separate flowpaths for coolant such that the coolant is in thermal communication with the exhaust conduit. A first one of these passages extends only over the inlet portion of the exhaust conduit; the other of the coolant passageways extends over the intermediate and outlet portions of the conduit although it can, and, in the embodiment shown, does extend over the inlet portion as well. The heat exchanger is connected to receive exhaust gases from the engine. Its coolant passageways are connected in a circuit which includes an inlet by which make-up water is introduced into a pump which forces fluid through the first passageway of the heat exchanger into the cooling passages of the engine from whence it is circulated back to the inlet side of the pump when the coolant has a temperature below a selected value. When the coolant temperature rises above that value, it is permitted to flow past a thermostatic valve to the second coolant passageway of the heat exchanger, after which it is exhausted to the exhaust gas stream. The heat exchanger is oriented so that one portion of the second coolant passageway is disposed above other portions and the conduit is arranged so that flow is confined at one point along the length of the exhaust conduit to flow in the region of that uppermost point whereby the second fluid passageway is maintained substantially full of coolant from that point upstream.



3,765,480

DEVICE FOR COOLING ROTORS

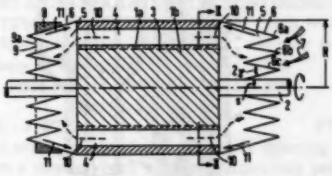
Paul Fries, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Apr. 20, 1971, Ser. No. 135,606

Claims priority, application Germany, Apr. 24, 1970, P 20 19 956.8

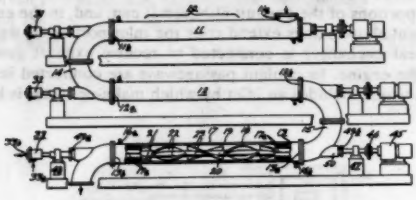
Int. Cl. F28f *5/00*; F28d *15/00*

U.S. Cl. 165—86 **9 Claims**



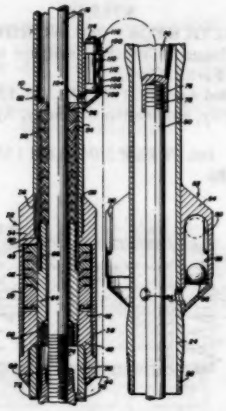
A cooling device for cooling a rotor comprises a condensation chamber on a front surface of the rotor and a plurality of cavities containing an evaporable working medium provided in the area of the heating zones at the periphery of the rotor and ending directly in the condensation chamber.

3,765,481
HEAT EXCHANGER AND MIXER
William L. Root, Bethlehem, Pa., assignor to The Bethlehem Corporation, Bethlehem, Pa.
Filed Feb. 9, 1972, Ser. No. 224,677
Int. Cl. F28f 5/06
U.S. Cl. 165—92 11 Claims



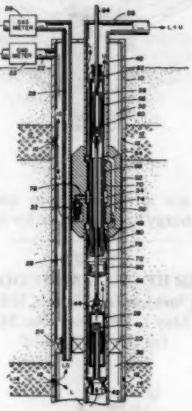
Mixing apparatus comprising a gang of mixers each having an elongated jacketed hollow shell with an inlet and an outlet for process material and a series of pairs of helical blades mounted in axially adjacent and circumferentially offset relation in the shell with the blades in axially adjacent pairs being pitched oppositely to cause the material to be divided and folded or twisted in alternate directions as it advances through the shell is provided with means to transfer heat through the blades and to the process material. The blades are hollow and are mounted on a hollow tubular shaft which has internal manifold means providing fluid communication between adjacent ends of the pairs of blades. A conduit extends centrally through the shaft and forms an annular axially extending passage adjacent the bases of the blades for containing a heat-transfer fluid and transferring heat therefrom. Heat transfer fluid flowing through the blades is returned to its source at the other end of the shaft through the return conduit and the annular passage. There is provided means to rotate the shaft at a relatively slow speed to enhance the mixing and heat transfer action in the apparatus by sweeping from the inside of the shell relatively stagnant films which otherwise would build up.

3,765,482
LUBRICATED PUMP ROD STRING FOR OIL WELLS
Sidney L. Harrison, Chickasha, Okla., assignor to Heavy Oil Producers Service, Incorporated, Chickasha, Okla.
Filed Apr. 17, 1972, Ser. No. 244,471
Int. Cl. E21b 43/00
U.S. Cl. 166—106 10 Claims



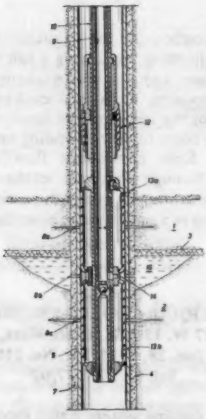
A tool for incorporation into the production tubing of an oil well to enable the pump rod string to reciprocate in a lightweight oil or other lubricant, and the heavy oil being produced flowing in the annulus between the production tube and casing. The tool includes a pressure operated circulating sub, a pump rod pack-off sub and a tubing pack-off sub, as well as a rod pack-off retrieving tool and a back pressure gas production sub which replaces the usual bottom standing valve in the pump. This tool enables the oil being produced to be pumped up through the annulus between the tubing and casing with the tubing above the tool being filled with a light fluid, such as diesel oil, water, or any other similar light fluid which will lubricate the pump rod.

3,765,483
METHOD AND APPARATUS FOR PRODUCING DUAL ZONE OIL AND GAS WELLS
Naylan N. Vencil, Odessa, Tex., assignor to Dresser Industries Inc., Dallas, Tex.
Filed Aug. 9, 1971, Ser. No. 170,166
Int. Cl. E21b 43/00
U.S. Cl. 166—265 3 Claims



Two oil and gas zones are produced by allowing production from each zone to drain to separate chambers where production from each zone is pumped by a separate pump; the outputs from the separate pumps are commingled and conducted to the earth's surface. A separate gas vent is provided for each zone to the earth's surface.

3,765,484
METHOD AND APPARATUS FOR TREATING SELECTED RESERVOIR PORTIONS
Tyler W. Hamby, Jr., Metairie, and Leo P. Broussard, New Orleans, both of La., assignors to Shell Oil Company
Filed June 2, 1972, Ser. No. 259,130
Int. Cl. E21b 33/124, 33/138, 43/27
U.S. Cl. 166—254 8 Claims



Selected portions of a subterranean reservoir are treated by seating a packer that forms a slideable seal above a perforated

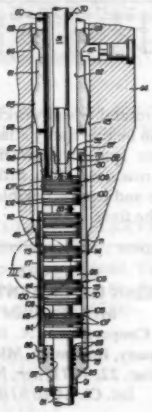
section of well casing and repetitively sealing and moving a depth-straddling sealing device to isolate and treat perforations that open into individual portions of the reservoir, while maintaining the slideable seal and a borehole fluid pressure that substantially equals the formation fluid pressure during the movement of the depth-straddling sealing devices.

3,765,485

CASING RUNNER TOOL FOR SUBSEA WELL

A. Michael Regan, Huntington Beach, Calif., assignor to Regan Forge & Engineering Company, San Pedro, Calif.

Filed July 7, 1971, Ser. No. 160,399
Int. Cl. E21b *31/00*
U.S. Cl. 166—285 6 Claims



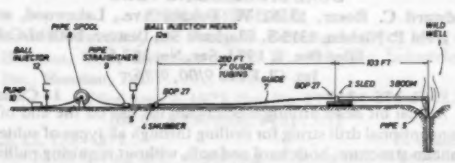
The casing running tool has an outer body portion telescoped about an inner body portion to form an annular chamber for receiving pairs of first and second bearing rings therein with each first bearing ring having a groove adjacent a groove in the inner body portion to receive a snap ring therebetween and with each second bearing ring having a groove adjacent a groove in the outer body portion for receiving ball bearings therebetween; a non-compressible fluid is provided in the space between the first and second bearing rings of each pair to separate the bearing rings and to rotatatively, axially support the inner body by the outer body portion via said fluid so that the outer body portion may be clamped by a latch dog in a subsea wellhead while the inner body portion is rotated by a tubing string run from a floating vessel above the well.

3,765,486

WELL BLOWOUT CONFINEMENT WITH DENSE BALLS

Charles S. Matthews; Carey E. Murphey, Jr.; Albert K. Dittmer, and William L. Mandery, all of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,272
Int. Cl. E21b *43/00*
U.S. Cl. 166—290 8 Claims



In confining an outflow of fluid from a blowing or wild well, a fluid-confining conduit is extended to form a fluid connection at a selected intermediate depth within the well and utilized to inflow fluid and fluid-transported relatively large dense particles or balls that form a relatively dense and low permeability fluidized bed or mass of particles that effectively confines the outflow of gas.

3,765,487

APPARATUS AND METHOD FOR RELEASING DIFFERENTIALLY STUCK PIPE

James W. McEver, New Orleans, La., assignor to Shell Oil Company, Houston, Tex.

Filed June 16, 1972, Ser. No. 263,502
Int. Cl. E21b *31/02*
U.S. Cl. 166—301 17 Claims

Pipe stuck in a well by pressure differential sticking is recovered by swabbing the well to reduce pressure around the point of differential sticking and then exerting an upward pull on the stuck pipe. The method is practiced with an apparatus comprising a swabbing tool connected to a well jar or bumper sub.

3,765,488

WELL TREATING METHOD

Samuel E. Pence, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 6, 1972, Ser. No. 241,816
Int. Cl. E21b *43/26*
U.S. Cl. 166—308 12 Claims

Disclosed is a method of treating a subterranean formation penetrated by a wellbore. The method comprises injecting down the wellbore and subjecting to above atmospheric pressure an essentially anhydrous mixture comprising liquid carbon dioxide as a first component together with a second component of an alcohol gelled to a viscosity of at least 10 centipoise with a hydroxyalkyl cellulose. The alcohol is selected from those alcohols containing from 1 to 3 carbon atoms with the hydroxyalkyl cellulose being further defined in that it is substituted at the primary alcohol position with alkyls containing 3 or 4 carbon atoms.

3,765,489

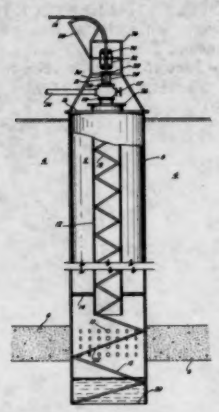
METHOD AND APPARATUS FOR CONTINUOUSLY INJECTING A FLUID INTO A PRODUCING WELL

George P. Maly, Newport Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Feb. 14, 1972, Ser. No. 225,870
Int. Cl. E21b *43/00*
U.S. Cl. 166—310 17 Claims

A method and apparatus for continuously injecting a treating fluid into a recovery well while simultaneously producing from the well is disclosed. A small perforated injection tube is inserted into the production tubing of the well and a sufficient length of tube is introduced beyond that required for complete suspension within the well to cause the tube to spiral upwardly within the tubing in helical contact with the tubing wall. The perforations are located at well bore elevations adjacent the fluid-bearing zones traversed by the well to allow treating fluid

within the tube to enter the well bore at these elevations. In operation, a treating fluid is forced into the injection tube and



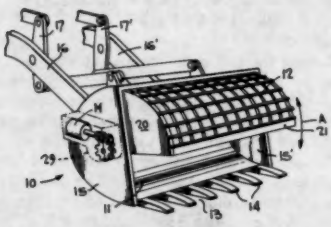
into the well bore at the selected elevations, and at the same time formation fluids are recovered from the well.

3,765,490

COMBINED LOADER BUCKET AND FINES SEPARATOR

George E. Logue, 321 Winters Ln., Montoursville, Pa.

Filed June 29, 1972, Ser. No. 267,520
Int. Cl. A01d *15/02*
U.S. Cl. 171—132 12 Claims



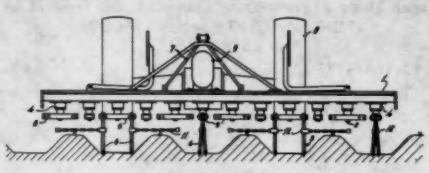
A loader bucket or scoop is adapted to separate fines after scooping material into the bucket by providing a movable grid to be positioned over the open side. The grid is substantially the same shape as the bucket or scoop and is positionable therein in an out-of-the-way position for loading of the scoop. A power means comprising a hydraulic motor and worm gear and pinion combinations serve to relatively move the grid between the operative position and the inoperative position. The grid is contiguous with the inside surface of the scoop and when the scoop and grid are cylindrical the grid moves in an arc and 360° movement may be accommodated. A scraping edge is provided on the grid for removing stuck material on the inside surface of the scoop and the grid may be formed of steel reinforcing rods; the cross rods also serving as scrapers and agitating the innermost portion of the load prior to dumping.

3,765,491

TINE CULTIVATOR WITH RELEASABLE STRIKING TOOL

Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed Sept. 29, 1971, Ser. No. 184,679
Claims priority, application Netherlands, Sept. 29, 1970, 7014267
Int. Cl. A01b *49/04*
U.S. Cl. 172—189 14 Claims



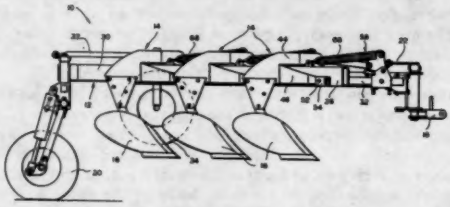
A cultivator has rotatable soil-working tines to which flexible striking tools can be releasably attached. The striking tools can be attached to spaced apart tines to cut vegetation between ridges of row crop. The striking tools are slideably secured to the tines and can be flexible to extend horizontally during rotation of the tines.

3,765,492

EARTH WORKING IMPLEMENT WITH TRIPPING MECHANISM

Gordon A. Irwin, Cooperstown, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 22, 1971, Ser. No. 126,759
Int. Cl. A01b *61/00*
U.S. Cl. 172—266 9 Claims



A tractor drawn multiple bottom trip beam moldboard plow having a diagonally extending main frame member. A plurality of trip beams are pivotally connected to the frame member. Each trip beam has an inverted generally U-shaped portion, the bight portion thereof being disposed above the frame member, and a bifurcated portion, the legs thereof being pivotally connected to the frame adjacent opposite sides of the frame member.

3,765,493

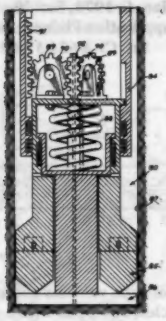
DUAL BIT DRILLING TOOL

Edward C. Rosar, 13352 W. Dakata Ave., Lakewood, and Irvin P. Nielsen, 1315 S. Clarkson St., Denver, both of Colo.

Filed Dec. 1, 1971, Ser. No. 203,536
Int. Cl. E21b *9/00, 9/36*
U.S. Cl. 175—319 14 Claims

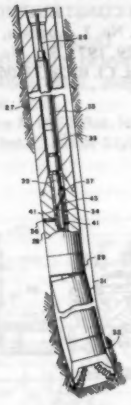
A dual bit head drilling mechanism for use on the end of a conventional drill string for drilling through all types of subterranean structure, both hard and soft, without requiring pulling of the drill string to change bits whenever a different type or hardness of rock is encountered. The mechanism includes a two-pronged drag bit using tungsten carbide inserts and a surface set diamond bit. The two bits can be alternately brought into use merely by increasing or decreasing the amount of

thrust on the bit head mechanism. A cable and sheave assembly interconnects the driving sleeve, tungsten carbide bit



head and diamond bit head, and compressible Belleville washer springs are provided for normally biasing the diamond drill bit head into drilling operation.

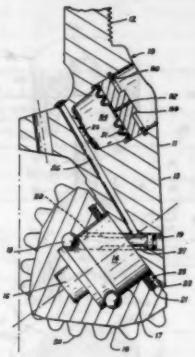
3,765,494
CIRCULATING SLEEVE
Fred S. Kielman, Jr., Bellaire, Tex., assignor to Sperry-Sun Well Surveying Company, Sugarland, Tex.
Filed Apr. 21, 1972, Ser. No. 246,293
Int. Cl. E21b *17/00*
U.S. Cl. 175—320 **5 Claims**



In a drilling system, a subassembly provides a means for seating an instrument housing in the drill string during a drilling operation and for permitting a normal flow of drilling fluids around the instrument housing. The seat also provides means for orienting the instrument housing in a predetermined position relative to a portion of the drill system.

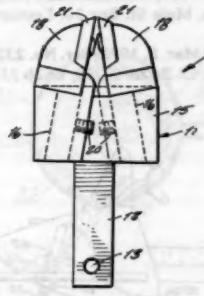
3,765,495
DRILL BIT SEALS
Henry W. Murdoch, and Percy W. Schumacher, Jr., both of Houston, Tex., assignors to G. W. Murphey Industries, Inc., Houston, Tex.
Filed Aug. 2, 1972, Ser. No. 277,351
Int. Cl. E21b *9/08*; F16j *15/16*
U.S. Cl. 175—371 **11 Claims**

An earth boring drill employing roller cutters is provided with a new and improved seal to inhibit ingress of detritus into the cutter bearing area and egress of lubricant therefrom. The parts may be so arranged that when assembled, the seal is placed in hoop compression. The shape of the seal is such that its cross section is not overly compressed or displaced when in operating position: this prevents undue compression set, wear and heating of the seal. Also, the seal has a greater radial cross-sectional extent that axial extent by a ratio of at least



one-and-one-half to one to conserve bearing space and to provide the necessary flexibility to accommodate the various movements of the cutter relative to the shaft upon which it is rotatably mounted.

3,765,496
DRILL HEAD UNIT WITH THROWAWAY INSERT HOLDERS
Margarita C. Flores, and Arnol Staggs, both of 1155 Lincoln St., Wyandotte, Mich.
Filed Dec. 27, 1971, Ser. No. 211,864
Int. Cl. E21b *9/06*
U.S. Cl. 175—383 **7 Claims**

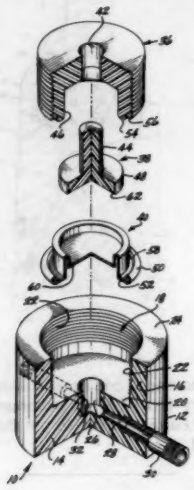


A drilling tool for use in the mining industries, the present tool having advantages over presently existing drill heads in view that it costs less, provides more cutting edges and promotes safety to miners, the device consisting of a main member having a shank for being attached to a drilling machine or some other device, the main member at its opposite end having a working head that includes securement there to of a pair of throw away insert holders, each one of the holders having a hexagonal shaped carbide throw insert secured there to by means of a screw.

3,765,497
HYDRAULIC COMPRESSION LOAD CELL
Petur Thordarson, 13700-42nd Pl. N.E., Seattle, Wash.
Filed Sept. 5, 1972, Ser. No. 286,266
Int. Cl. G01g *5/04*; G01l *5/12*
U.S. Cl. 177—208 **3 Claims**

A hydraulic compression load cell which includes interchangeable internal parts of different sizes to impart differ-

ing mechanical advantages adapting the cell to different load ranges, together with a mechanical amplifier which is adjusta-



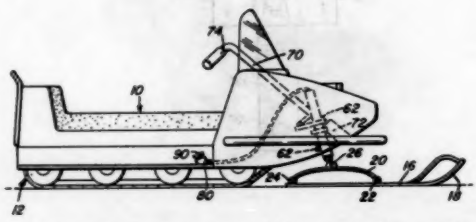
ble to further expand and contract the load capacity of the cell.

3,765,498

SNOWMOBILE WITH VERTICALLY ADJUSTABLE SKIS

John R. Rogerson, Main St. Box 10, Leonardville, New Brunswick, Canada

Filed Mar. 8, 1972, Ser. No. 232,778
Int. Cl. B62m 27/00; B62b 13/00
U.S. Cl. 180—5 R 5 Claims



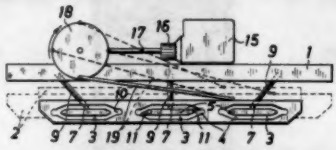
In a snowmobile of the type including rear endless track drive means and a pair of forward opposite side dirigible skis the skis are oscillatably supported from the lower free piston rod end portions of a pair of hydraulic cylinders for angular displacement relative to the cylinders about horizontal transverse axes. Suitable structure is provided for preventing rotation of the piston rod portions of the cylinders relative to the cylinder portions thereof and the cylinder portions are supported from the snowmobile chassis for angular displacement about their longitudinal axes whereby steerage of the snowmobile may be affected in the usual manner. By supporting the skis from the extendable and retractible piston portions of the cylinders the snowmobile may be leaned to the inside of a turn and in an uphill direction when traversing a slope to thereby increase the stability of the snowmobile.

3,765,499

WALKING VEHICLES

Erkki E. Harmala, Eura, Finland

Filed Jan. 6, 1971, Ser. No. 104,426
Claims priority, application Finland, Jan. 7, 1970, 24/70
Int. Cl. B62d 57/02
U.S. Cl. 180—8 E 14 Claims



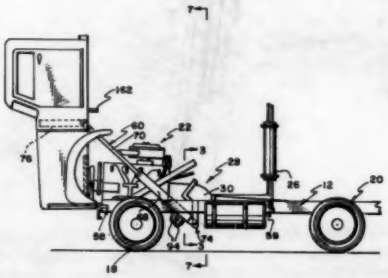
Walking or stepper-type vehicles and more particularly carriages for such vehicles, equipped with a mechanism including one or more pairs of runner members for cyclically moving the vehicle, particularly on terrain which is difficult to travel on, as on soft or marshy earth where wheeled or crawler-type vehicles prove to be useless. The runner members have each a closed guiding slot of the same length and height as the stepping movement, the carriage of the vehicle being associated with a corresponding number of pivotably connected rollers following the slots in the runner members. The invention provides exemplary embodiments with mechanical and hydraulic driving mechanism.

3,765,500

AUTOMOTIVE TRACTOR UNIT WITH TILTOVER TYPE CAB CONSTRUCTION

Marvin O. Reeves, Rte. No. 1, Augusta, Kans. 67010

Filed Dec. 29, 1971, Ser. No. 213,261
Int. Cl. B62d 33/06
U.S. Cl. 180—77 TC 11 Claims



An automotive tractor unit inclusive of a tiltover cab type of construction provided with feed lines for cab-mounted instruments that extend along and can twist about the pivotal axis of the cab, together with decoupable hydraulic means for actuating pivotal movement of the cab. Means are provided for readily decoupling the cab mounted engine, power train, and steering controls.

3,765,501

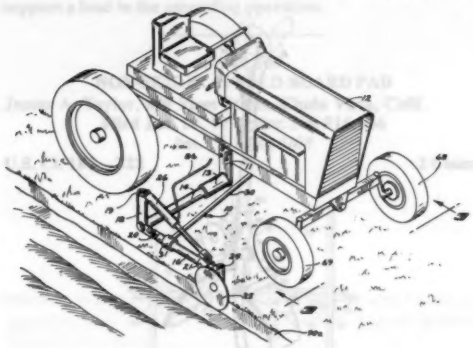
AUTOMATIC STEERING SYSTEM

Alfred B. Burvee, Fairmount, N. Dak.

Filed July 27, 1972, Ser. No. 275,632
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 R 24 Claims

An automatic steering system for a tractor with a conventional hydrostatic steering system that includes a guide and sensing device mounted on a guide arm to follow a furrow, a support mounted on the tractor and mounting the guide arm for movement, a hydraulic ram operable to move the guide arm to elevate said device, a rotary valve connected to the

hydrostatic system for applying hydraulic fluid to the wheel steering cylinder to steer the tractor, a control valve for operating the guide arm cylinder to move th guide arm to elevate said device and block the rotary valve controlling the steering when the device is elevated, and a linkage connecting



the guide arm to the rotary valve to apply hydraulic fluid under pressure to the appropriate end of the steering cylinder for maintaining the tractor in a generally parallel relationship to the furrow as the tractor advances, the linkage including spring mechanism for resiliently retaining the guide arm in preselected lateral relationship to the tractor.

3,765,502

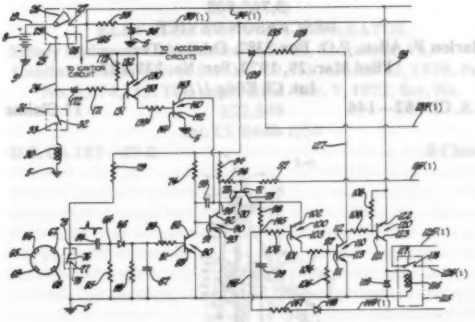
AUTOMATIC VEHICLE DOOR LOCK CIRCUIT

Douglas E. Mark, Davison, Mich., assignor to General Motors Corporation, Detroit, Mich.

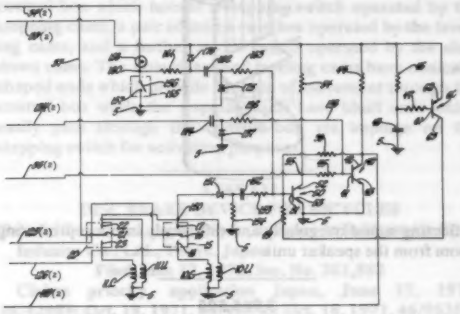
Filed June 1, 1972, Ser. No. 258,520

Int. Cl. B60r *21/00*

U.S. Cl. 180—112 **10 Claims**



An automatic vehicle door lock circuit for automatically locking the doors at a predetermined speed. A set signal, produced upon the energization of this circuit, triggers a bistable multivibrator memory circuit to the condition which produces a door unlock signal upon the output thereof. An electrical vehicle speed signal, produced when the vehicle has reached the predetermined speed, and the door unlocked signal are applied across the emitter-base electrodes of a type PNP transistor which, in combination with another type PNP transistor, produce an electrical lock doors signal of a predetermined duration. Another type PNP transistor, responsive to this lock doors signal, completes an energizing circuit for the lock solenoids in each of the vehicle doors to operate the lock mechanism thereof to the door locked condition. At the conclusion of the lock doors signal, a doors locked signal is produced to trigger the bistable multivibrator memory circuit



to the condition which removes the door unlocked signal from the output thereof.

3,765,503

MEMBRANE-BREASTPIECE FOR STETHOSCOPES AND METHOD OF MANUFACTURING SAME

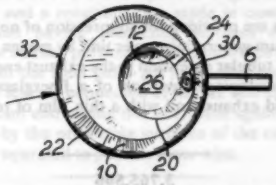
Blasius Speidel, Jungingen, Germany

Filed Nov. 1, 1972, Ser. No. 302,816

Claims priority, application Germany, Nov. 2, 1971, P 21 54 365.7

Int. Cl. A61b *7/02*; 181 *24*

U.S. Cl. 181—24 **6 Claims**



A membrane-breastpiece for stethoscopes including a funnel-shaped member having a cylindrical funnel throat portion integrally formed therewith as a protuberance in its upper surface at an angle relative to the surface of the sound membrane of the breastpiece; a through bore in the funnel throat portion receiving a hollow tubular connector for a stethoscope tube, and with the end of the connector in the bore being upset to form a hollow rivet structure rigidly fastened to the throat portion. The breastpiece is formed by deep-drawing and stamping metal blanks, which may be sequentially conveyed along an endless belt or band for series manufacture.

3,765,504

SPEAKER APPARATUS

Ryosuke Itoh, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1971, Ser. No. 204,841

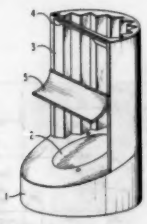
Claims priority, application Japan, Dec. 17, 1970, 45/112856; Dec. 17, 1970, 45/112857

Int. Cl. G10k *13/00*; H04r *1/28*

U.S. Cl. 181—31 B **2 Claims**

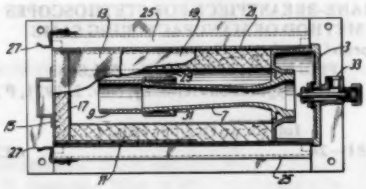
A speaker apparatus has a cabinet and at least one speaker

unit secured to the cabinet, and includes at least one board for



reflecting sound irregularly and diffusively into a reproducing room from the speaker unit.

3,765,505
NOISE SUPPRESSED VENTURI POWER UNIT
Frank P. Pendleton, Montclair, N.J., assignor to Vac-U-Max, Belleville, N.J.
Filed Nov. 15, 1972, Ser. No. 306,540
Int. Cl. F04b *21/00, 39/00*
U.S. Cl. 181—33 K **8 Claims**



Apparatus are provided for suppression of noise in a venturi-type vacuum generating power unit by means of application of a resilient tubular extension to the exhaust end of the venturi and/or enveloping a portion of a fiberglass muffler surrounding said exhaust end with a thin film of resilient plastic material.

3,765,506
SOUND ATTENUATING MUFFLER
Larry E. Strunk, Jackson, Mich., assignor to Tenneco Inc., Racine, Wis.
Filed Nov. 8, 1972, Ser. No. 304,769
Int. Cl. F01n
U.S. Cl. 181—44 **13 Claims**

A muffler suitable for use in an internal combustion engine exhaust system has a tubular member extending the full length of an outer shell to provide a gas passage connecting the inlet end to the outlet end of the shell and has a reduced diameter central portion which is surrounded by an inner shell that communicates with the interior of the gas flow passage by means of perforations in the wall of the tubular member, the tubular member also containing perforations on opposite sides of the inner shell that open into a chamber between a tubular member and the outer shell.

3,765,507
FIRE ESCAPE DEVICE
Nicholas A. Rabelos, 340 S. Ridgewood, Apt. 403, Daytona Beach, Fla.
Filed June 2, 1972, Ser. No. 258,991
Int. Cl. A62b *1/14, 1/20*
U.S. Cl. 182—5 **8 Claims**

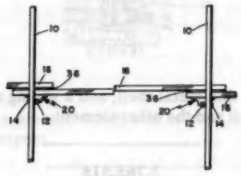
A fire escape in the form of an elongated flexible rope having a loop formed at one end thereof for connection with a component of the building structure, bracket, or other stationary device preferably located interiorly of a building structure, room, or the like, with the rope extending through a window or other opening and being of sufficient length to reach to the ground. A slidable, manually actuated device is mounted on the rope for longitudinal sliding movement in relation thereto with the rate of movement or descent being manually controlled by a person supported therefrom by the use of a flexible sling. The rate of descent is controllable by a screw-type rope clamping device which frictionally grips the rope for controlling the descent of a person along the rope.

3,765,508
DESCENSON DEVICE
Marion F. Allen, P.O. Box 3387, Odessa, Tex.
Filed Mar. 29, 1972, Ser. No. 239,127
Int. Cl. E04g *1/18*
U.S. Cl. 182—146 **11 Claims**

A device for carrying personnel from one level to a lower level, the device being automatically returnable to the upper point. The device includes an upstanding support, a carrier for vertically traversing the support, a sheave secured at the upper

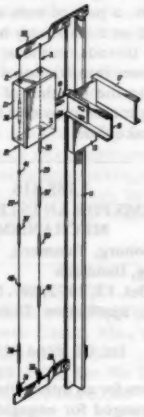
end of the support, a counterweight disposed within the support member for vertical movement, a cable engaging the sheave and being secured at one end to the carrier and at the other end to the counterweight within the support, and a braking system mounted on the carrier to stop the carrier in an emergency. Also provided is a pressurized fluid system to expedite return of the carrier to the upper point for re-use or to support a load in the ascending operation.

3,765,509
NON-SKID SCAFFOLD BOARD PAD
James A. Taylor, 470 Moss Street, Chula Vista, Calif.
Filed Jan. 10, 1972, Ser. No. 216,566
Int. Cl. E04g *5/08*
U.S. Cl. 182—222 2 Claims



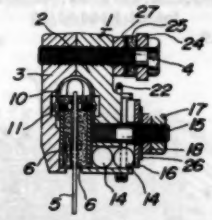
A scaffold board construction including pads for attachment to the underside of a scaffold plank to restrain the plank from slipping longitudinally or transversely on the plank-supporting bars of the scaffold, which bars are ordinarily tubular metal, and the pads are constructed of rubbery, non-skid material the pads being of two configurations, one thicker and channelled and the other thin and planar, the thicker pads having channels to accept and grip the bars, and the thin pads engaging other planks. For convenience in attaching the thicker pads they are formed with integral nailing strips permitting the pads to be quickly and semi-permanently secured to the planks, but both pads may be secured adhesively if desired. The preferred form of plank has the thicker channelled pad at one end and the planar pad at the other end for use in overlapping series.

3,765,510
ELEVATOR CONTROL APPARATUS
Sidney Richmon, 1202 Peachtree Blvd., Richmond, Va.
Continuation-in-part of Ser. No. 19,318, March 13, 1970, Pat. No. 3,674,113. This application Mar. 7, 1972, Ser. No. 232,549
Int. Cl. B66b *1/50*
U.S. Cl. 187—29 R 8 Claims



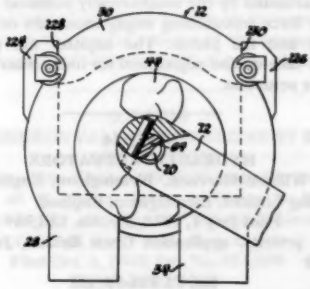
An apparatus for selecting the floor, and slowing down and stopping an elevator is described. The apparatus comprises first and second wires vertically mounted in an elevator shaft. The first wire has a plurality of level cams and a plurality of stepping cams alternatively mounted along its length. The second wire has a plurality of slow down cams mounted along its length. The wires and cams pass through appertures in a control box which houses a stepping switch operated by the stepping cams, a pair of micro switches operated by the leveling cams, and a further micro switch operated by the slow down cams. The slow down and leveling cams have conically shaped ends which provide for ease of movement through the control box while the stepping cams have blunt ends which easily pass through the control box yet impinge on the stepping switch for activation purposes.

3,765,511
DISC BRAKE DEVICE FOR BICYCLES
Takeshi Toyomasu, Ageo, Japan, assignor to Bridgestone Cycle Industry Co., Ltd., Tokyo, Japan
Filed June 12, 1972, Ser. No. 261,582
Claims priority, application Japan, June 17, 1971, 46/42989; Oct. 18, 1971, 46/95355; Oct. 18, 1971, 46/95356
Int. Cl. B62l *3/02*
U.S. Cl. 188—26 2 Claims



This disc brake device for bicycles has steel balls inserted into cavities formed equidistant in one of two brake body portions held together by bolts to form a brake body and made in contact with one of two friction pads arranged at each side of a brake disc, and a rotatable cam made in contact with the steel balls and having projecting surfaces each formed between those surface portions of the cam which are normally in contact with the steel balls. An inner wire connected to a bicycle brake lever is connected at its free end to the cam for rotating the cam and urging the steel balls against one of the friction pads by the projecting surfaces of the cam when the brake lever is operated to pull the inner wire.

3,765,512
BRAKE ACTUATING AND ADJUSTING MECHANISM
Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 30, 1972, Ser. No. 302,083
Int. Cl. F16d *65/54*
U.S. Cl. 188—71.8 2 Claims



A brake mechanism having a pressure actuated piston moving disc brake pad assemblies into braking engagement with a

disc for service brake operation, and a mechanically actuated mechanism which mechanically moves the piston to engage the brake pad assemblies with the disc for a parking brake operation. The mechanical mechanism includes a one-way lock means mounted on a rotatable and axially movable shaft so that it maintains brake adjustment by sliding on the shaft with excess movement of the piston in the brake engaging direction, but locks on the shaft to prevent movement of the piston in the brake release direction beyond a small predetermined amount sufficient to establish brake pad and disc clearance. The piston is normally nonrotatable in its cylinder, but holding means preventing substantial piston rotation may be released to activate reset means for the one-way lock means so that rotational movement of the piston engages the one-way lock means and prevents it from locking on the shaft so as to permit movement of the piston into the cylinder to reset the piston position when new brake linings have been installed.

3,765,513

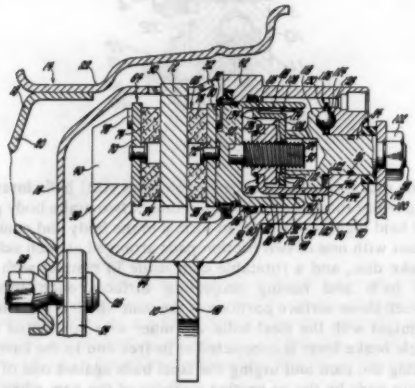
BRAKE ACTUATING AND ADJUSTING MECHANISM

Frank W. Brooks, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,082

Int. Cl. F16d *65/56*

U.S. Cl. 188—71.9 **2 Claims**



A brake mechanism having a pressure actuated piston moving disc brake pad assemblies into braking engagement with a disc for service brake operation, and a mechanically actuated mechanism which mechanically moves the piston to engage the brake pad assemblies with the disc for a parking brake operation. The piston has a screw and an adjuster nut threaded thereon, the nut being restrained from excess axial movement relative to a mechanically actuated shaft in one direction and a housing containing the piston and shaft in the other direction. The nut forms a part of a clutch arrangement which is actuated by the mechanically actuated shaft so that operative force transmitting engagement can occur between the shaft and the piston. The adjuster nut provides for clearance take-up and adjustment for lining wear during pressure brake actuation.

3,765,514

HYDRAULIC ACTUATORS

Anthony William Harrison, Birmingham, England, assignor to Girling Limited, Birmingham, England

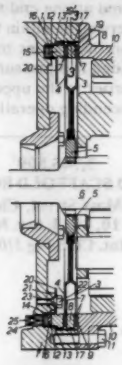
Filed July 1, 1971, Ser. No. 158,969

Claims priority, application Great Britain, July 4, 1970, 32,529/70

Int. Cl. F16d *65/32*

U.S. Cl. 188—72.4 **7 Claims**

In an hydraulic actuator comprising a cylinder and piston assembly of which one element is part of a rigid stationary member contact of hydraulic fluid with the said member is



prevented by a thin metal shell, and a sliding seal is provided between the shell and the other element.

3,765,515

BRAKE DEVICE HAVING BRAKE CLEARANCE ADJUSTING MEANS

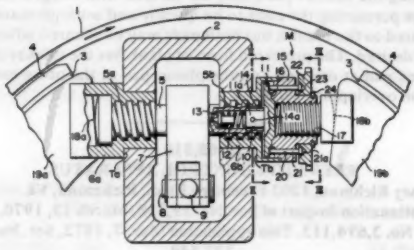
Karo Shimada, Ohta-ku, Tokyo, Japan, assignor to Tokyo Buhin Kogyo Co., Ltd., Kanagawa, Japan

Filed Aug. 4, 1972, Ser. No. 277,860

Claims priority, application Japan, Aug. 7, 1971, 46/59833

Int. Cl. F16d *65/56*

U.S. Cl. 188—79.5 GE **9 Claims**



A brake device having a brake drum and a pair of brake shoes, a screw rod having screw threads of opposite direction at its opposite ends, a pair of nuts axially slidably but nonrotatably supported on a stationary housing, said nuts engaging with the screw threads on the screw rod and adapted to move the brake shoes into frictional contact with the brake drum in response to the rotation of the screw rod, a brake clearance adjusting means provided between one of the nuts and the adjacent brake shoe.

3,765,516

BRAKING SYSTEMS FOR AN INTERMITTENT DRIVING MECHANISM

Jorn Thellufsen, Soborg, Denmark, assignor to GNT Automatic A/S, Soborg, Denmark

Filed Oct. 12, 1972, Ser. No. 297,089

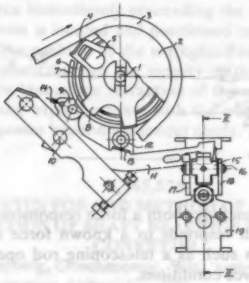
Claims priority, application Denmark, Oct. 13, 1971, 4958/71

Int. Cl. F16d *53/00*

U.S. Cl. 188—85 **1 Claim**

In a braking system for an intermittent driving mechanism, a braking shoe is arranged for engaging the outer one of two flexible braking rings loosely surrounding a braking drum, a braking finger fast with the braking drum loosely engaging

between said braking rings, the braking shoe being mounted at one end of a pivoted braking arm, the other end of which is engageable with a pivoted catch and release member operable by an electro magnet.



3,765,517

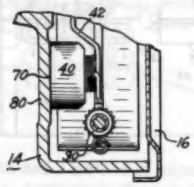
ELECTRIC BRAKE ARMATURE

Leroy King Grove, 16878 Londonberry Ln., South Bend, Ind.

Filed Oct. 12, 1971, Ser. No. 188,346

Int. Cl. F16d 65/34

U.S. Cl. 188—138 **12 Claims**



An electric brake mechanism having a drum, a pair of brake shoes, an actuating arm for the shoes, and an electro-magnet on the arm, in which the armature on the drum contains alternate lands and recesses in the surface thereof, to permit the magnet to dissipate surface friction heat by interrupting frictional contact and to produce a wiping action on the face of the magnet to remove particles of metal and other material which might otherwise create hard spots on the magnet surface capable of causing damage to the armature and ultimately brake failure. The recesses are preferably grooves arranged in a spiral configuration of a constantly increasing radius. The recesses may be filled with an abrasive-impregnated material, such as an epoxy, for maximizing braking performance and reliability. The drum and armature may be cast integrally with one another and the recesses either machined or cast in the surface of the armature.

3,765,518

WHEEL CYLINDER AND BLEEDING MEANS

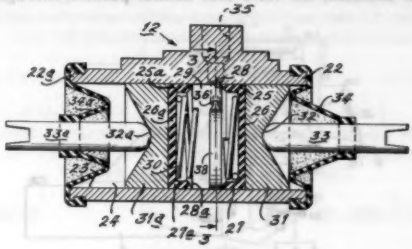
Michael E. Martin, Creve Coeur, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Feb. 28, 1972, Ser. No. 229,881

Int. Cl. F16d 65/00

U.S. Cl. 188—352 **27 Claims**

An abutment member is provided within the bore of a wheel cylinder for engagement with the wheel cylinder cups to prevent the movement thereof into blocking or overlapping engagement with the port hole opening in said bore upon vacuum bleeding of the brake system.



3,765,519

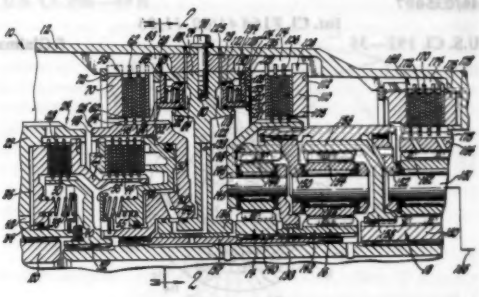
PISTON AND RETRACTION SPRING SUBASSEMBLY

Nathaniel B. Kell, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 13, 1972, Ser. No. 217,478

Int. Cl. F16d 65/32

U.S. Cl. 188—366 **4 Claims**



The transmission illustrated includes a central support or web member having annular chambers formed in both end faces thereof, with an annular piston mounted in each chamber and a spring retainer plate mounted adjacent the outer edge of each chamber. Once assembled, the spring retainer plate is self-locking in that a conically shaped outer surface formed on a plurality of tabs located around the outer periphery of each of the spring retainers is urged into contact with respective oppositely disposed conical recesses formed just inside the web end faces by a spring which also urges the piston away from the retainer plate and into the chamber. The retainer plate is mounted in place by first inserting one or more of its ear portions within the conical recess and then bowing the retainer plate to insert the remaining ear portions therein. A cylindrical extension formed on the annular piston extends through the central opening of the retainer plate to selectively engage the adjacent clutch or brake plates.

3,765,520

TRANSMISSION VALVE NEUTRALIZED BY BRAKE APPLICATION

Tadao Asano; Shin Kitano; Hiroji Yamaguchi, and Yutaka Momose, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha and Toyoda Automatic Loom Works, Ltd., both of Kariya, Aichi Prefecture, Japan

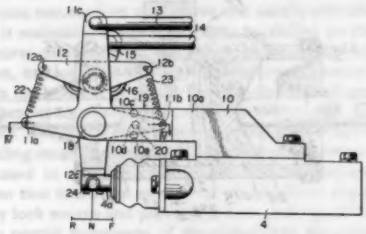
Filed Oct. 6, 1969, Ser. No. 864,009

Int. Cl. B60k 29/02

U.S. Cl. 192—4 A **7 Claims**

A device for controlling a change-over valve comprises a first manually operable lever to place the change-over valve

into a desired position through a second lever connected to the valve, and a third manually operable lever to force, only when actuated, the valve into neutral position through the



second lever irrespective of the actuation of said first lever, said levers being adapted to allow the valve to return automatically to a forward or reverse drive position from said neutral position upon release of the third lever.

3,765,521

FREE WHEEL HUB MECHANISM

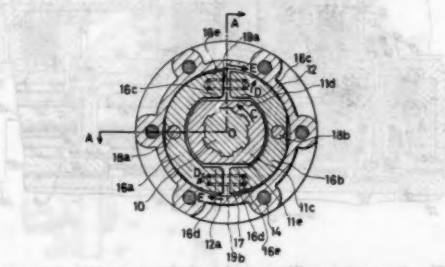
Tooru Kagata, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed May 25, 1972, Ser. No. 256,764

Claims priority, application Japan, May 25, 1971, 46/035697

Int. Cl. F16d *41/00, 11/06*

U.S. Cl. 192—35 **5 Claims**



A free wheel hub mechanism for a vehicle including an axle shaft for the front wheels adapted for selectively receiving a driving force from a vehicle engine, a cam member rotatable with the axle shaft, a non-drive member operatively connected to the front wheels and frictional means disposed between the cam member and the non-drive member, the frictional means being automatically and frictionally engaged with the non-drive member by the cam member when driving force is transmitted to the axle shaft and being automatically disengaged from the non-drive member when the driving force is interrupted, whereby the operator automatically has either a rear two wheel drive or a four wheel drive, and the front driving system is not rotated while the rear two wheel drive is effective.

3,765,522

CLUTCH-RELEASE LINKAGE AUTOMATIC AXIAL-ACTING SLACK ADJUSTER

Nils Goran Dahlkvist, Darlington, England, and Nils Borje Lennart Sander, Malmo, Sweden, assignors to SAB Brake Regulator Company Limited, Darlington, Co. Durham, England

Filed July 26, 1971, Ser. No. 165,905

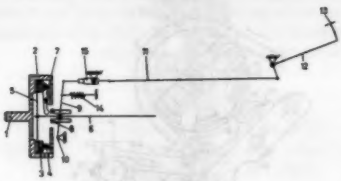
Claims priority, application Great Britain, Aug. 24, 1970, 40,619/70

Int. Cl. F16d *13/75*

U.S. Cl. 192—111 A **5 Claims**

A slack adjuster linkage is incorporated in a clutch release mechanism to standardize the position of movement at which the clutch is operated to compensate for wear and changes in the clutch mechanism.

The slack adjuster is axial-acting and connected in a push rod linkage or hydraulic system operating the clutch



mechanism, and includes both a force responsive means such as a spring which responds to a known force and a travel responsive means such as a telescoping rod operable under predetermined force conditions.

3,765,523

PAPER MONEY RECEIVING APPARATUS

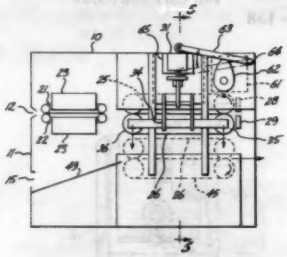
Tomoyuki Nakanishi, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Feb. 8, 1971, Ser. No. 113,123

Claims priority, application Japan, Feb. 13, 1970, 45/12975; Feb. 13, 1970, 45/12976

Int. Cl. B65h *29/14*; G07d *7/00*

U.S. Cl. 194—4 R **7 Claims**



An apparatus for receiving paper money or the like to be deposited at a bank or the like, comprising: means for receiving a note or the like from a depositor, means for checking the genuineness of the note received; means for temporarily storing the note the genuineness of which has been confirmed; and means for conveying the note from the storing means in one direction to accept the note and alternatively in the opposite direction to return the note to the depositor.

3,765,524

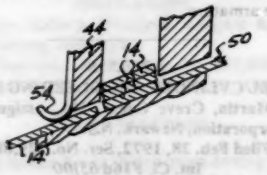
AUTOMATIC WORKPIECE LOADING ARRANGEMENT FOR A GRINDER FEED WHEEL

Herbert J. Fallon, Beloit, Wis., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 20, 1972, Ser. No. 236,017

Int. Cl. B65g *59/06*

U.S. Cl. 198—59 **11 Claims**



A loader arrangement is disclosed for advancing workpieces into recesses formed in fixturing stations carried by the

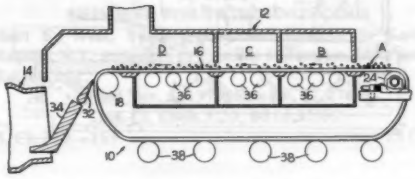
grinder feedwheel; and comprises a reciprocating stripper blade which forces a workpiece into the fixture recess by means of an intermediary workpiece train in turn supplied from a vertical stack of workpieces formed from a bowl feeder which are stripped off by reciprocation of the stripper blade. The workpiece immediately preceeding the one loaded in the workpiece train is located and positioned in the loader chute to maintain the position of the workpiece in the recess as the feedwheel passes through the vicinity of the loader arrangement to allow immediate retraction of the stripper blade and full seating and wiping contact with the workpiece as the fixture station passes beyond the loader chute.

3,765,525

APPARATUS FOR AND METHOD OF ADJUSTING LOCATION OF SHAFT BEARINGS ON GRATE CONVEYOR

Walter J. Hartwig, Oconomowoc, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed June 6, 1972, Ser. No. 260,129
Int. Cl. B65g *15/30*; F16h *7/10*
U.S. Cl. 198—208 **20 Claims**



An apparatus for and a method of adjusting the location of the shaft bearings, particularly the tail shaft bearings, on a grate conveyor or the like, to maintain proper tension on the chains of the conveyor to compensate for change in length of the chains due to temperature change and wear, while also insuring parallelism of the head and tail shafts of the conveyor with respect to each other.

Each shaft bearing whose position is to be adjusted is supported on a slidably adjustable mounting means, and a fluid motor such as a hydraulic ram is mounted with the cylinder thereof in a fixed position on the shaft support structure for a given range of adjustment of the bearing, the ram being pressurized to move the slidable mounting means and the bearing carried thereby to an adjusted position. Precisely dimensioned shims are interposed between the cylinder of the hydraulic ram and the adjustable mounting means to maintain the bearing in a given adjusted position, and after the shims have been so interposed the hydraulic ram is depressurized but the ram cylinder remains in its fixed position to serve as an abutment for the shims.

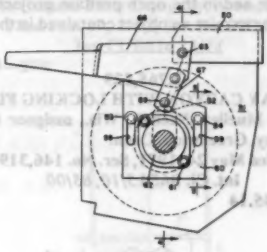
3,765,526

HARVESTER

Arthur Lowell Hubbard, Des Moines; Russell Dean Copley, Ankeny, and Thomas Heral Gannon, Dallas Center, all of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Mar. 11, 1971, Ser. No. 123,250
Int. Cl. B65g *33/00*
U.S. Cl. 198—217 **12 Claims**

In a cotton harvester in which the harvesting units feed cotton to a rear transverse auger, the improvement residing in mechanism for holding down and releasing the auger from its auger housing so as to permit cleanout of the auger upon it becoming clogged or upon it receiving a foreign object which cannot pass through the auger structure.

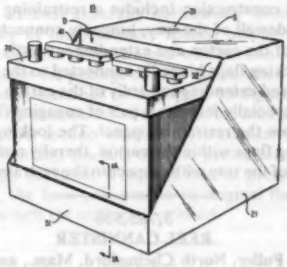


3,765,527

DUAL-COMPARTMENT PACKAGE

John W. Vargo, Parma Heights, Ohio, assignor to Filter Dynamics International, Inc., Edison, N.J.

Filed Sept. 22, 1972, Ser. No. 291,366
Int. Cl. B65d *5/48*, *81/32*
U.S. Cl. 206—44 R **11 Claims**



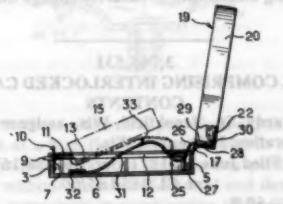
A package formed by panels that are hinged together and have sets of extensions that respectively form a closed end, and a partially open end, of the package. An extension of one of the panels divides the package into an open compartment for displaying a stored item, such as a battery, and a closed compartment for storing an associated item, such as a package of electrolyte. Additional extensions of other panels serve to reinforce the display compartment of the package.

3,765,528

CASES

Michel Parisot, Colombes, France, assignor to Societe Franco-Hispano-Americaine (Francispam), Saint Gratien, France

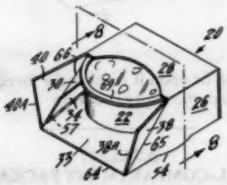
Filed May 11, 1972, Ser. No. 252,469
Int. Cl. B65d *25/02*
U.S. Cl. 206—45.13 **7 Claims**



A case comprising a body to which is hinged a lid. The body and the lid are connected by a spring strip having a V portion

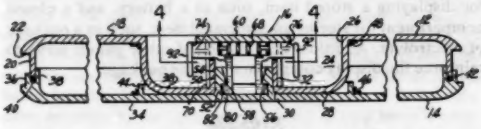
one leg of which is attached to the lid while the other leg has a curved extension attached to the base of the body. The extension, in the closed position of the case, lies generally flat against the base and in the open position projects away from the base in order to raise an object contained in the case.

3,765,529
DISPLAY CARTON WITH LOCKING FLAPS
David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.
Filed May 24, 1971, Ser. No. 146,319
Int. Cl. B65d *5/10, 85/00*
U.S. Cl. 206—45.14 **10 Claims**



A carton construction having at least one open end for display of a tray contained therein, featuring a new end construction designed to hold the tray in place within the carton. The carton end construction includes a restraining panel, biased against a sidewall of the tray, hingedly connected to the bottom panel of the carton and extending inwardly of the carton, and two locking flaps hingedly connected to the side panels of the carton and extending inwardly of the carton. The end construction especially features a pair of engaging flaps extending laterally from the restraining panel. The locking flaps overlie the engaging flaps within the carton, thereby restricting lateral movement of the tray with respect to the restraining panel.

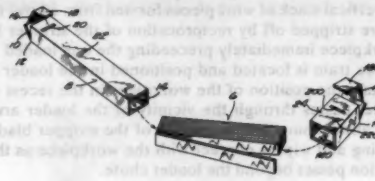
3,765,530
REEL CANNISTER
Edward H. Fuller, North Chelmsford, Mass., assignor to Basf Wyandotte Corporation, Wyandotte, Mich.
Filed July 2, 1971, Ser. No. 159,178
Int. Cl. B65d *85/02*
U.S. Cl. 206—52 F **12 Claims**



A substantially dust-free reel container for magnetic computer tapes and the like includes two mating sections, the first section having a central upright spindle provided with an internal shoulder, the second section having a centrally located biased locking mechanism to securely engage the central spindle.

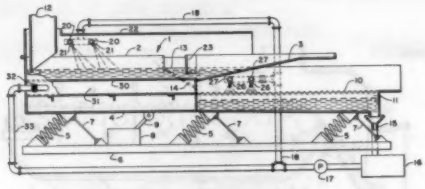
3,765,531
PACKAGE COMPRISING INTERLOCKED CARTON AND CONTENTS
Albert H. Hardy, Sr., Brookfield, Wis., assignor to Beck Carton Corporation, Milwaukee, Wis.
Filed June 30, 1971, Ser. No. 158,167
Int. Cl. B65d *85/00*
U.S. Cl. 206—60 R **2 Claims**

A carton comprising sleeves telescopically assembled upon carton contents has ends provided with flaps extending longitudinally along the exterior of the carton, tabs at the ends of the flaps being inserted through slots in the carton side wall and folded and pressed outwardly by the carton contents. Very weighty contents such as strips of metal can be packaged



securely because of the interlock provided between the contents and the tabs.

3,765,532
WOOD CHIP WASHER
John M. Morris, and Preston H. Schrader, both of Louisville, Ky., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed July 12, 1971, Ser. No. 161,509
Int. Cl. B03b *7/00*
U.S. Cl. 209—17 **1 Claim**

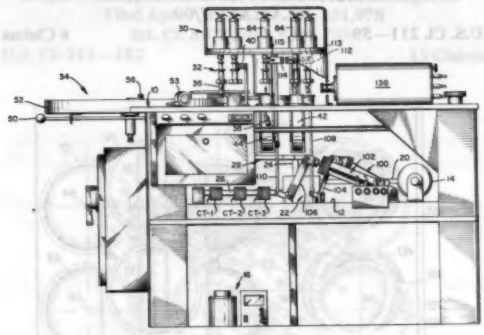


Wood chips are cleaned of foreign or tramp material such as sand and pebbles in a vibrating water bath. Optionally the chips are driven down into the bath by overhead downwardly directed jets of water. The vibration of the bath container conveys the heavy material, i.e. the sand, pebbles, etc., along the bottom of the water bath and up an inclined ramp at the downstream end. The washing action of the vibrating water bath and overhead jets may be enhanced, if desired, by upward flow of water issuing from a perforated deck forming the bottom of the vibrating trough containing the water bath. The water carrying the cleaned wood chips is discharged over a weir in a wall of the vibrating water bath container and is drained from the chips as they pass over a vibrating screen deck. The water, after passing through a settling tank to remove the sand, etc., is recycled through the jets and perforated deck. Optionally the wood chips may be subjected to a further spray wash during the initial portion of their travel across the vibrating screen deck.

3,765,533
FOREIGN PARTICLE INSPECTION MACHINE
Edward John Stephens, Manchester; Ernest Vader Hart, West Hartford, both of Conn., and Andre Maurice Vandandaigue, Saint Therese, Quebec, Canada, assignors to Emhart Corporation, Bloomfield, Conn.
Continuation of Ser. No. 869,144, Oct. 24, 1969, abandoned.
This application Sept. 9, 1971, Ser. No. 179,142
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **19 Claims**

Liquid filled containers to be inspected are stored upright on a rotating disc which feeds them between funnel defining walls to a V-shaped opening in a slide block movable radially in timed relationship with an intermittently driven turret. The turret has a plurality of chucks for receiving the containers, and an elevating mechanism raises a container upwardly into each chuck at a machine infeed station. Each container is then

spun at one or more succeeding stations to cause the liquid to swirl therein, after which rotation is stopped at an inspection station and successive video frames recorded to detect differences due to particles moving in the still swirling liquid. Logic circuitry must then generate a positive "accept" signal for discharge at one machine station. Any container not so accepted will be discharged at a succeeding station.

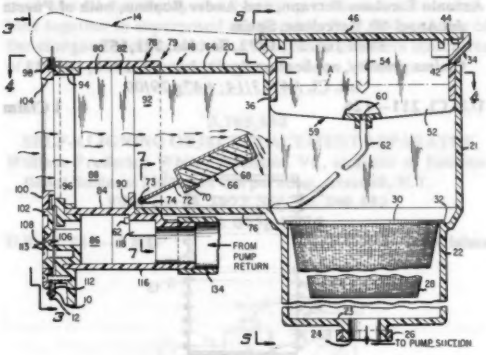


3,765,534

SKIMMER FOR SWIMMING POOLS

Robert E. West, Yardley, Pa., and Kishore V. Kantebet, Roselle, N.J., assignors to Cascade Industries, Incorporated, Edison, N.J.

Filed Nov. 5, 1970, Ser. No. 87,276
Int. Cl. E04h *3/20*; B01d *35/00*
U.S. Cl. 210—169 **15 Claims**



A swimming pool skimmer includes a pressure chamber connected to the pump return. Water is discharged from the pressure chamber, through a nozzle located immediately below the surface water intake of the skimmer, and induces a strong counter-current flow toward the skimmer, with an attendant multiplication of the skimmer's zone of influence.

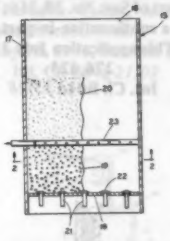
A feeder of purifying chemicals may be combined with the skimmer. Water under pressure is supplied to the feeder whenever the pump, and hence the skimmer is in operation. As a consequence, the water level in the feeder is raised to cause immersion and dissolution of the chemicals, and their spill-over while in solution into the water passing through the skimmer. When the pump is not operating, the water level of the feeder drops below the chemicals receiver. The chemicals thus dissolve only when the pump and skimmer are operating. Desirably, pressure water for the feeder is supplied through a branch or auxiliary tube extending from the pressure chamber.

3,765,535

AERATION DEVICE FOR FILTER TANKS

Merlin H. Anderson, and John J. Scholten, both of Ames, Iowa, assignors to General Filter Company, Ames, Iowa

Filed Feb. 17, 1972, Ser. No. 227,223
Int. Cl. B01d *23/24*
U.S. Cl. 210—274 **8 Claims**



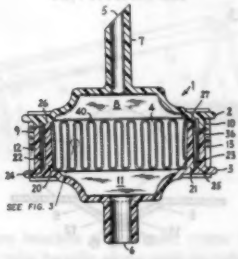
An aeration device for a filter tank comprises an expandable and collapsible flexible air hose which is adapted to be connected to a source of pressurized air. The air hose has a generally flattened transverse cross section in its normal or collapsed configuration which is provided by a pair of longitudinally extending spaced-apart flat wall portions and a pair of arcuate wall portions extending between the flat wall portions. The air hose extends generally horizontally within the tank, and a plurality of longitudinally spaced oblong orifices are provided through the lower arcuate wall portion. The orifices are closed against the passage of filter media when the air hose is in its normally flattened or collapsed configuration. When pressurized air is introduced to the hose, the hose expands into a transverse cross section which is more circular than the initial cross section and the slits open to permit air to flow outwardly through the hose. When the flow of pressurized air is discontinued, the hose collapses to its original flattened configuration in which the orifices are closed.

3,765,536

BLOOD FILTER CASCADE

David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 88,356, Nov. 10, 1970, Pat. No. 3,701,433. This application June 16, 1972, Ser. No. 263,584
Int. Cl. B01d *27/00*
U.S. Cl. 210—446 **35 Claims**



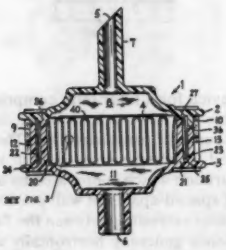
A disposable filter element is provided, capable of passing human blood at a high flow rate and useful in human blood transfusion systems, to remove undesired suspended particles, substantially without removal of normal and desirable blood components, comprising in combination three filter elements in a cascade, the first comprising plastic netting and having a pore size within the range from about 800 to about 4,000 microns, the second a woven square weave plastic mesh having a pore size within the range from about 20 to about 50

microns, and the third a fibrous unwoven mat having a pore size within the range from about 10 to about 30 microns.

3,765,537
DUAL BLOOD FILTER

David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Continuation-in-part of Ser. No. 38,356, Nov. 10, 1970, Pat. No. 3,701,433, and a continuation-in-part of Ser. No. 263,584, June 16, 1972. This application July 31, 1972, Ser. No. 276,623
Int. Cl. B01d *35/28*
U.S. Cl. 210—446 32 Claims

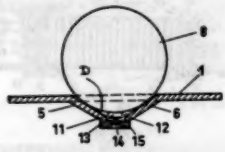


A disposable filter element is provided, capable of passing human blood at a high flow rate and useful in human blood transfusion systems, to remove undesired suspended particles, substantially without removal of normal and desirable blood components, comprising in combination two filter elements, the first comprising plastic netting and having a pore size within the range from about 800 to about 4,000 microns, and the second a woven square weave plastic mesh having a pore size within the range from about 20 to about 50 microns.

3,765,538
ANALYSIS INSTRUMENT MOUNT FOR AXIALLY PARALLEL CYLINDERS

Alexander Kowert, Stieglitzstrasse 21, Neu Isenburg-Gravenbruch, Germany

Filed Oct. 14, 1970, Ser. No. 80,599
Claims priority, application Germany, Oct. 15, 1969, G 69 40 049.3
Int. Cl. A47f *7/00*
U.S. Cl. 211—13 2 Claims

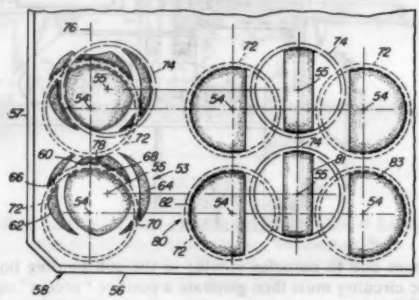


A receptacle for axially parallel cylinders in an analysis instrument including a plate having a long I-shaped opening therethrough to provide projections extending toward each, the projections are then downwardly bent to provide a crevasse as a bed for the cylinders, the latter being provided with bolt means extending through a slit at the bottom of the crevasse and engaging on the edges of the projections to secure the cylinder in the receptacle.

3,765,539
SUPPORT PLATFORM AND PACKAGE INCORPORATING SAME

Edwin C. Boyle, 21 Kingsbridge Rd., Somerset, N.J.

Filed June 28, 1971, Ser. No. 157,153
Int. Cl. A47f *7/00*
U.S. Cl. 211—59 6 Claims

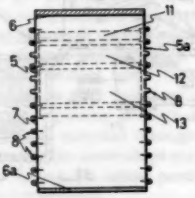


A support platform for supporting articles of different sizes is disclosed, the platform having a plurality of groups of means for receiving the articles, each of the groups being able to receive an article in at least two different locations with respect to an edge of the platform. A package is formed by stacking a plurality of platforms having articles placed thereon in a carton.

3,765,540
FRAME FOR SUPPORTING CLASSIFICATION AND FILING DRAWERS

Antonio Escolano Serrano, and Andre Bouhou, both of Puerta del Angel 40, Barcelona, Spain

Filed Jan. 27, 1972, Ser. No. 221,153
Claims priority, application Spain, Jan. 28, 1971, 165623
Int. Cl. A47f *3/14*; A47g *29/00*
U.S. Cl. 211—126 1 Claim



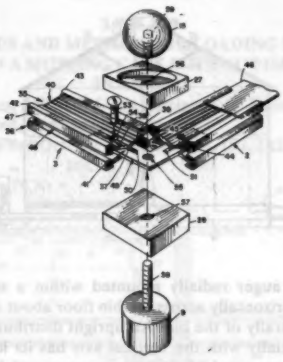
Frame for supporting drawers having two supporting laminar structures held vertically and parallel to one another. The laminar structures have on their opposite faces a plurality of elongated parallel and horizontal stamped openings in equal number and at the same height. The openings have a length and width which correspond to the length and thickness of detachable narrow flanges which can be housed in its interior, and have a depth which is approximately equivalent to half the width of the narrow elongated flange. Each of the receptive stamped openings of the detachable narrow flanges forms, as a result of moulding or stamping on the supporting sheets of the frame, a group of three interconnecting slots organized according to three adjacent sides of a rectangle, giving rise to the formation of a rectangular flap which is subsequently overlapped, thus forming a rib having a section in the form of a "U" and having its opening orientated towards the interior of the frame.

3,765,541

STRUCTURAL UNITS AND METHOD OF ASSEMBLING THEM

Marion J. Madey, and Norman A. Groneman, both of Park Ridge, Ill., assignors to Poster Products, Inc., Chicago, Ill.

Filed Apr. 7, 1971, Ser. No. 131,978
Int. Cl. A47f 5/00; F16b 7/04
U.S. Cl. 211—182 13 Claims



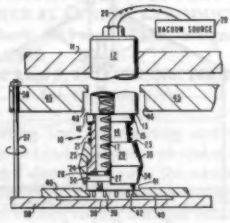
Various types of structures are made by combining a plurality of elongated bodies, each in cross section at the ends thereof, including a pair of spaced bars intermediately connected by a web portion, and means connecting said bodies comprising an elongated connecting member having flat ends slotted inwardly, the sides of said slots embracing said web portions whereby said elongated bodies are united. By uniting four of said elongated bodies and connecting them with corner posts three dimensional structures are formed which can be used as such as display or advertising units or can be assembled together in superposed relationship. Due to the nature of the elongated bodies and the connecting members structures of various sizes, shapes and appearance can be made.

3,765,542

SELF-ALIGNING OBJECT PLACEMENT APPARATUS

William Frederick White, Williston, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,482
Int. Cl. B65g 47/24
U.S. Cl. 214—1 BT 10 Claims



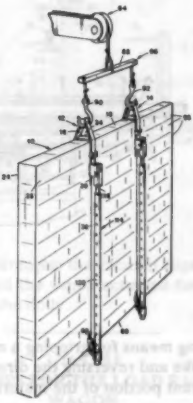
An object positioning and placement apparatus capable of engaging the object within a pickup zone, moving the object into a preselected translational and rotary orientation, and placing the oriented object onto a receiving member. The object pickup assembly is freely movable within a pickup zone for locating and engaging the object without the requirement of either precision object placement for pickup or close construction tolerances in the pickup assembly itself. After engaging the object, the object pickup assembly is then brought into contact with a homing member causing the object pickup assembly and the object engaged thereby to assume the preselected translational and rotary orientation with respect to the receiving member for placing the object onto the receiving member.

3,765,543

SYSTEM FOR LIFTING AND HANDLING PANELS

Paul M. Thomas, Paradise Valley, Ariz., assignor to The Thomas 1970 Trust, Phoenix, Ariz.

Filed May 18, 1972, Ser. No. 254,662
Int. Cl. E04g 21/02
U.S. Cl. 214—1 H 6 Claims



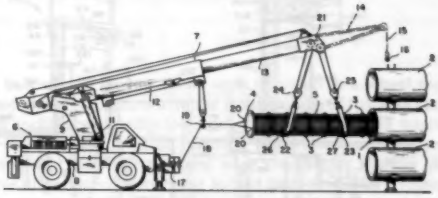
A system for handling a panel including means releasably securing a panel for lifting and handling and means attachable to the first means for aligning the panel in a upright position during installation of the panel.

3,765,544

CRANE FOR EXTRACTING HORIZONTAL LONG TUBE BUNDLES

Thomas V. Murphy, 1026 Morago Dr., Bel-Air, Calif.

Filed Aug. 16, 1972, Ser. No. 280,966
Int. Cl. B66f 1/00
U.S. Cl. 214—1 P 1 Claim



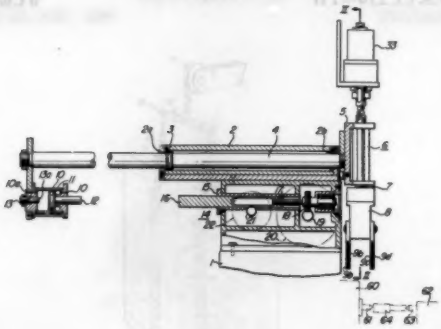
This disclosure teaches a hydraulic crane for removing a horizontal long tube bundle along with its tube sheet from its shell. A winch line, connected to the tube sheet, extracts the tube bundle. The crane has a boom comprising a proximal and a distal section mounted in telescoping relationship. The distal section has a boom point with a pair of hoisting slings depending therefrom to support the tube bundle as it is being extracted from the shell. A pulley suspended from the proximal section aligns the winch line in horizontal orientation. The hoisting slings are spaceable apart sufficiently so that they span a major portion of the length of the tube bundle whereby the tube bundle can be suspended and balanced safely.

3,765,545

LOADER WITH REVERSING MEANS

Masaharu Iwata, Bisai-shi, Japan, assignor to Okuma Machinery Works Ltd., Nagoya-shi, Japan

Filed Sept. 18, 1972, Ser. No. 290,189
Claims priority, application Japan, Nov. 12, 1971, 46/106379
Int. Cl. B25j 9/00
U.S. Cl. 214—1 BB 7 Claims



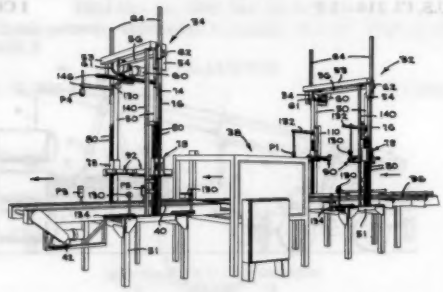
A loader having means for gripping a material processed in a lathe and the like and reversing the direction of the material so that the different portion of the material may be processed by the lathe.

3,765,546

APPARATUS FOR STACKING OR UNSTACKING CONTAINERS

David E. Westerling, 5936 Meadowbrook Ln., Riverside, Calif.

Filed Oct. 6, 1971, Ser. No. 187,042
Int. Cl. B65g 57/30
U.S. Cl. 214—6 BA 10 Claims



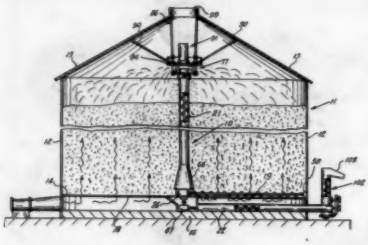
An apparatus which can be converted to either a stacker or an unstacker of relatively heavy objects, such as bins of fruit, that are delivered to and from the apparatus by means of a conveyor. The bins are supported upon dogs which are pivotally mounted upon a pair of carriages positioned at each side of the conveyor. The carriages are slidably mounted upon upright posts and are arranged for joint switch-controlled vertical movement on the posts. This joint movement is provided by vertically extending racks which are attached to the carriages and which are arranged to be driven through pinions affixed to a common horizontal shaft at the top of the apparatus.

3,765,547

APPARATUS FOR CIRCULATING GRAIN STORED IN A CIRCULAR BIN

Charles C. Shivvers, Corydon, Iowa

Division of Ser. No. 638,257, May 15, 1967, Pat. No. 3,563,399. This application Oct. 9, 1970, Ser. No. 79,654
Int. Cl. B65g 65/46
U.S. Cl. 214—17 DA 4 Claims



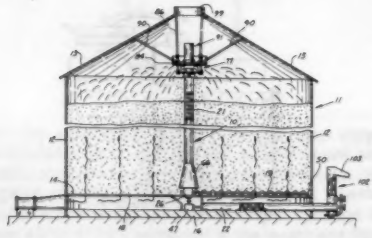
A sweep auger radially mounted within a storage bin is rotatable horizontally across the bin floor about a vertical axis located centrally of the bin. An upright distributing auger arranged coaxially with the vertical axis has its lower end adjacent the inner end of the sweep auger and its upper end spaced from the roof of the bin. The sweep auger is of a construction such that for each complete revolution across the bin floor it moves predetermined volumes of material over given axial sections thereof for delivery to the distributing auger. The material or grain discharged from the distributing auger is spread across the top surface of the grain stored in the bin. All of the grain in the bin is thus acted upon continuously for circulation through the bin for drying purposes. Field grain may be introduced through the roof of the bin for concurrent distribution and circulation with the grain already in the bin. A bin unloading auger is located below the bin floor to receive grain directly from the sweep auger for discharge exteriorly of the bin.

3,765,548

SWEEP AUGER STRUCTURE

Charles C. Shivvers, Corydon, Iowa

Division of Ser. No. 638,257, May 15, 1967, Pat. No. 3,563,399. This application Oct. 15, 1970, Ser. No. 81,163
Int. Cl. B65g 65/46
U.S. Cl. 214—17 DA 2 Claims



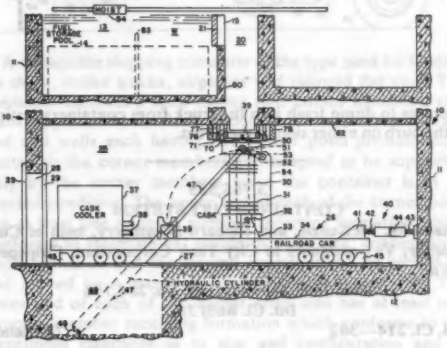
A sweep auger radially mounted within a storage bin is rotatable horizontally across the bin floor about a vertical axis located centrally of the bin. An upright distributing auger arranged coaxially with the vertical axis has its lower end adjacent the inner end of the sweep auger and its upper end spaced from the roof of the bin. The sweep auger is of a construction such that for each complete revolution across the bin floor it moves predetermined volumes of material over given axial sections thereof for delivery to the distributing auger. The material or grain discharged from the distributing auger is

spread across the top surface of the grain stored in the bin. All of the grain in the bin is thus acted upon continuously for circulation through the bin for drying purposes. Field grain may be introduced through the roof of the bin for concurrent distribution and circulation with the grain already in the bin. A bin unloading auger is located below the bin floor to receive grain directly from the sweep auger for discharge exteriorly of the bin.

3,765,549
APPARATUS AND METHOD FOR LOADING NUCLEAR FUEL INTO A SHIPPING CASK WITHOUT IMMERSION IN A POOL

Cecil R. Jones, Milford, Conn., assignor to Transfer Systems Incorporated, New Haven, Conn.

Filed Oct. 21, 1971, Ser. No. 191,247
Int. Cl. B66c *17/00*
U.S. Cl. 214—18 N **15 Claims**



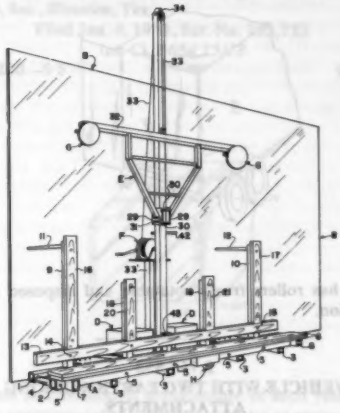
Apparatus and a method for loading nuclear fuel into a dry shipping cask is described. It is characterized by introduction of the transport vehicle carrying the shipping cask into the reactor building below an auxiliary pool connected to the fuel storage pool. The cask is elevated to an upright position and its open end sealed to the auxiliary pool walls to constitute in effect the pool bottom. Novel cask elevating and cask and vehicle locking means are described. A novel double seal providing leakage detection is also described.

3,765,550
DOLLY FOR LIFTING AND TRANSPORTING AND INSTALLING LARGE SHEETS OF FLAT GLASS AND OTHER FLAT SHEET PRODUCTS

Russell W. Tausheck, Hayward, Calif., assignor to Ace Glass Co., Hayward, Calif.

Filed Aug. 5, 1971, Ser. No. 169,415
Int. Cl. B60p *1/14*
U.S. Cl. 214—77 **9 Claims**

A dolly for lifting and transporting and installing large sheets of flat glass or other flat sheet products and comprising an elongated frame with a guideway for receiving an edge of the glass, the bottom of the guideway being provided with spaced apart hard rubber rollers that can rotate to permit the flat glass to be moved on or off of the guideway. The dolly has a centrally disposed and upwardly extending mast that is pivotally connected to the dolly and can be swung laterally through an angle of about 27°. A glass supporting frame is slidably and pivotally mounted on the mast and can be raised and lowered on the mast by means of a manually operated or electric winch and cable. The glass supporting frame has an arm mounted at its free end and extending in the direction of the length of the elongated dolly frame. This arm removably carries a vacuum cup at each end designed to grip and support a flat glass sheet. It is possible to pull a flat sheet of glass onto the dolly from an end of the guideway. It is also possible to swing the mast laterally in order to position the vacuum cups on the glass lifting frame at the desired locations on the side of

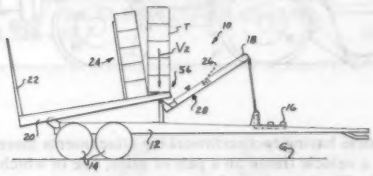


the sheet of glass whereupon the vacuum cups may be secured to the glass sheet and the winch actuated for lifting the glass and depositing it on the dolly.

3,765,551
UNLOADING RAMPS FOR THE LOAD RACK OF A BALE WAGON

Raymond E. Fisher, Lancaster, Pa., and Albert C. Cook, Kingsburg, Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 10, 1972, Ser. No. 216,386
Int. Cl. B65g *59/00*; B60p *1/00*
U.S. Cl. 214—82 **7 Claims**



A bale wagon having a load rack mounted to a wheel supported chassis structure with the front portion of the load rack being inclined upwardly towards the front of the bale wagon and including an inverted V-shape ramp structure disposed transversely the front terminal edge thereof for shifting the center of gravity of tiers being moved thereacross by a rolling rack, the tiers being moved thereacross being received by a table structure mounted adjacent the front terminal edge of the load rack.

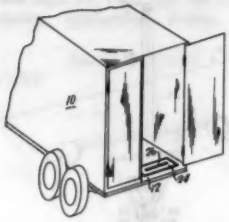
3,765,552
ROLL-IT-CONVEYOR SYSTEM FOR TRUCKS

Hugh J. Plunkett, New Haven, Conn., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Jan. 3, 1972, Ser. No. 214,569
Int. Cl. B60p *1/52*
U.S. Cl. 214—83.26 **3 Claims**

A truck or trailer has a floor with a hollow bed thereunder. The floor has an opening communicating with the bed. A door is removably disposed in the opening. A conveyor is

removably stored in the bed. The conveyor has a belt with articulated sections generally horizontally disposed end to end

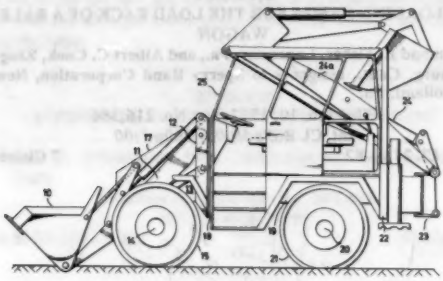


and also has rollers freely rotatable and disposed adjacent each section.

3,765,553
VEHICLE WITH TWO EARTHWORKING ATTACHMENTS

Hans Schaeff, 7183 Langenburg, Langenburg, Germany

Filed Apr. 26, 1971, Ser. No. 137,431
Claims priority, application Germany, May 8, 1970, P 20 22 427.5
Int. Cl. E02f 3/00
U.S. Cl. 214—138 R **14 Claims**



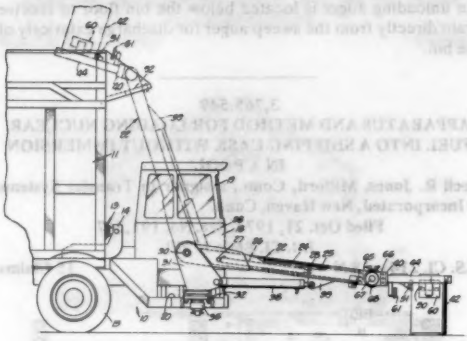
A vehicle having two earthworking attachments thereon including a vehicle frame on a pair of axles, one of which being steerable. The frame includes two frame units each connected to a working unit and an axle. The two frames are rotatably connected together.

3,765,554
SELF-LOADING TRUCK

George W. Morrison, Seal Beach, Calif., assignor to Maxon Industries, Inc., Huntington Park, Calif.

Filed July 12, 1971, Ser. No. 161,683
Int. Cl. B65f 3/02
U.S. Cl. 214—302 **10 Claims**

A self-loading truck having many uses and particularly suitable for transferring the contents of containers onto a truck and restoring the empty containers alongside the path of travel. Swivelling boom means operating in view of the truck driver and controlled by him while seated at the driver station includes both manual and semi-automatic controls for picking up containers from either side of the truck and emptying them into the cargo compartment by self-centering boom control means. The boom components are powered by pressurized fluid supplied by a driving engine which speeds up and resumes idling automatically during the cargo handling cycle. For trash handling operations, the power boom is supported on one forward corner of the truck chassis for swivelling movement cross-wise of the truck in full view of the driver and

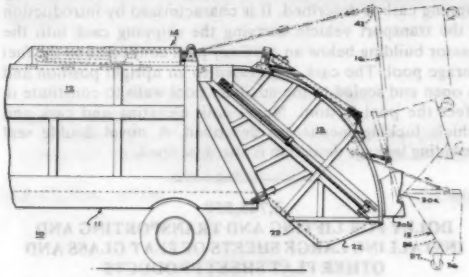


operates to dump trash into the truck from containers resting at the curb on either side of the street.

3,765,555
CONTAINER LIFT SYSTEM

Roland W. McKenzie, and Richard Stansberry, both of Culpeper, Va., assignors to City Tank Corporation, Culpeper, Va.

Filed June 21, 1972, Ser. No. 264,756
Int. Cl. B65f 3/02
U.S. Cl. 214—302 **24 Claims**



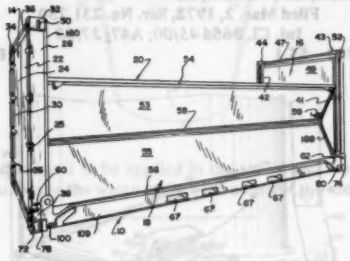
A lift system for a refuse collection vehicle, cooperable with pivotal connection means mounted on such vehicle, for tilting refuse containers and thereby charging the contents thereof into such vehicle, generally including a takeup or hoist mechanism mounted on the vehicle, a first cable operatively connected to the takeup mechanism and provided with means detachably connectable to a first container when such container is pivotally connected to the vehicle for tilting the container, at least a second cable supported on the vehicle having means detachably connectable to a second container when such container is pivotally connected to the vehicle, and means for detachably connecting such cables together whereupon when the second container is pivotally connected to the vehicle, the second cable is connected to the second container, the cables are connected together and the takeup mechanism is operated, the second container will be caused to tilt toward the vehicle and charge the contents thereof into the vehicle.

3,765,556

COLLAPSIBLE SHIPPING CONTAINER

Austin R. Baer, Elmhurst, Ill., assignor to Allied Products Corporation, Chicago, Ill.

Filed Sept. 11, 1969, Ser. No. 857,116
Int. Cl. B65j *1/02*; B65d *7/26*
U.S. Cl. 220—1.5 5 Claims



A collapsible shipping container of the type used for loading on ships, trailer trucks, airplanes and railroad flat cars. The container includes a floor having four corner members, side walls supported by the floor, a roof connected to the side walls and end walls each having two corner posts pivotally connected to the corner members and adapted to be supported only by the corner members when the container is in an erected condition. The upper end of each of the corner posts has at least one gripping member receiving formation which conforms to international standards as to size, configuration and location so that the erected container can be picked up and moved by a standard container handling device. The lower end of each of the corner posts also has at least one gripping member receiving formation which conforms to international standards as to size and configuration and is located so that when the container is in a collapsed condition with the end walls positioned over the roof, the formations at the lower ends of the corner posts will conform to international standards as to location so that the collapsed container can be picked up and moved by the standard container handling device in the collapsed condition as well as in the erected condition.

3,765,557

REINFORCED HIGH PRESSURE TEST VESSEL

Matthias M. Giwer, 1201 South Scott Street, Arlington, Va.

Continuation-in-part of Ser. No. 853,070, Aug. 26, 1969, abandoned. This application Sept. 20, 1971, Ser. No. 182,253
Int. Cl. F25j
U.S. Cl. 220—3 1 Claim

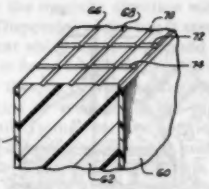
Stress relief is provided in a high pressure test vessel by wrapping a pre-stressed, braided multifilament of interwoven fiber glass filaments coated externally with an epoxy resin about the pressure vessel to reduce the possibility of vessel fatigue failure under cyclic operation.

3,765,558

CRYOGENIC TANK DESIGN AND METHOD OF MANUFACTURE

Daniel D. Withers, Houston, Tex., assignor to Arctic Tanker Group, Inc., Houston, Tex.

Filed Jan. 4, 1971, Ser. No. 103,723
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 F 13 Claims



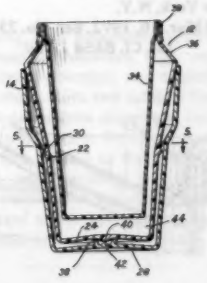
A vessel and method of manufacture of such vessel is provided for containment of a low temperature or cryogenic fluid. The wall of the vessel may be of a sandwich construction comprising a first layer of fiber reinforced polymer, a layer of gas expanded polymer foam and a second layer of fiber reinforced polymer similar to the first layer. Variations of the basic sandwich construction may be provided. The method of construction comprises a sandwich construction having a predetermined configuration to allow construction of a vessel having a cylindrical configuration, for example. The sandwich construction of the present invention allows suitable bonding of sections with a mixture of chopped fiber and polymer.

3,765,559

SLUSH CONE

Lawrence K. Sauey, Baraboo; Kenneth M. Douglas, Sun Prairie, and Gerald A. Rau, Baraboo, all of Wis., assignors to Flambeau Products Corporation of Wis.

Filed Oct. 13, 1971, Ser. No. 188,890
Int. Cl. B65d *25/00*; A47j *41/00*
U.S. Cl. 220—15 8 Claims



Improvements are provided in this invention relating to a slush cone assembly. The improvements are principally related to an insulating jacket for the slush cone and means for interlocking the jacket with the slush cone. The particular interlocking means take the form of molded plastic members along the outside of the walls of the slush cone and the inside walls of the jacket together with a flexible fingers for positively biasing the plastic members of the cone against the plastic members of the jacket.

3,765,560

SEALING APPARATUS

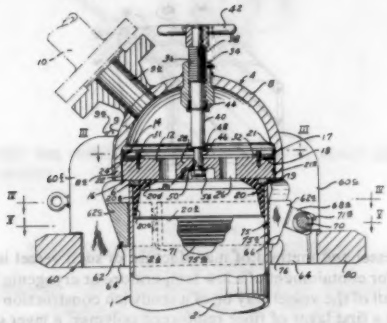
Norman H. Kemp, 2609 Manona Dr., Dallas, Tex.

Continuation-in-part of Ser. No. 000,022, Feb. 2, 1969, which is a continuation of Ser. No. 729,966, May 17, 1968, Pat. No. 3,498,493, and a continuation-in-part of Ser. No. 494,061, Pat. No. 3,387,738.

Filed Mar. 6, 1972, Ser. No. 232,107

Int. Cl. B65d *53/00*

U.S. Cl. 220—46 R 17 Claims



Sealing apparatus for pressure vessels including a resilient seal ring disposed in a receptacle secured to the vessel. The seal ring has an outer lip and an inwardly turned flange angularly disposed to the outer lip whereby pressure within the vessel is exerted through an opening in the seal ring to urge the seal ring into positive sealing relation with outer surfaces of the vessel around an opening in the vessel and with surfaces in the receptacle. The seal ring carries a seal member positionable through an opening in the vessel having surfaces urged by fluid pressure in the vessel into sealing engagement with surfaces inside the vessel.

3,765,561

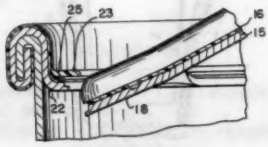
EASY OPENING CONTAINER PROVIDED WITH OPENING EDGE PROTECTIVE HOT MELT ADHESIVE BAND

Thab M. Hekal, Downers Grove, and Richard A. Payne, Naperville, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 10, 1972, Ser. No. 233,697

Int. Cl. B65d *17/20*

U.S. Cl. 220—54 8 Claims



A container having an easy opening end closure including a chuck wall portion and removable and non-removable panel portions defined by a score line. A band of a hot melt adhesive superimposed over the score line is permanently bonded to the chuck wall and releasably removal to the top face of the removable panel. Upon remoal of the panel, the band is released from contact with the panel but remains bonded to the chuck wall so as to provide a protective ledge for the raw edge of the non-removable panel portion which remains about the opening.

A protective shield for the raw edge of the severed panel portion is provided by a hot melt adhesive applied to the underside of the closure which is permanently adhered to the removable panel portion and releaseably adhered to the non-removable panel portion.

3,765,562

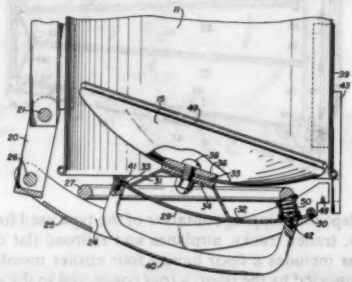
CLOSURE FOR PRESSURE VESSEL

Robert J. Shulz, Brookfield, Ill., assignor to Innovative Process Equipment, Inc., Palatine, Ill.

Filed Mar. 2, 1972, Ser. No. 231,250

Int. Cl. B65d *45/00*; A47j *27/08*

U.S. Cl. 220—55.1 10 Claims



A closure member having a peripheral resilient gasket is pivotally supported on a cross brace hingedly attached to the vessel for movement of the closure between an open position and a closed position wherein the closure is positioned within a cylindrical access opening in the vessel with the gasket compressed against the cylindrical wall of the vessel. With the closure in the sealed position the cross brace is locked to the vessel across the outer face of the closure to prevent outward movement thereof when the vessel is pressurized.

3,765,563

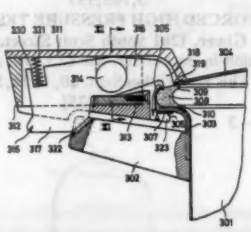
SAFETY LOCK FOR PRESSURE COOKER HANDLE

Paul Kraft, Am Linsenbrunnen 1, Ingen, Steige, and Karl Oberlander, Eberhardstr. 61, Geisl, Ingel, Steige, both of Germany

Division of Ser. No. 790,107, Jan. 9, 1969, Pat. No. 3,641,920. This application July 22, 1971, Ser. No. 165,314

Int. Cl. A47j *27/08*

U.S. Cl. 220—55.3 16 Claims



A handle for a steam pressure cooker, said handle having a safety means comprising a two arm rocking lever having a gasket engaging arm and a lid blocking arm and a stem discharge channel.

3,765,564

CUP FOR DENTAL WASTE

Karl Rune Persson, Halmstad, Sweden, assignor to Bila Cup AB, Halmstad, Sweden

Filed May 21, 1971, Ser. No. 145,634

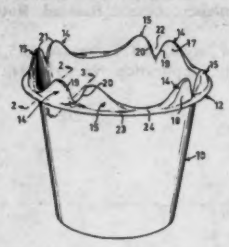
Claims priority, application Sweden, May 29, 1970, 7456/70

Int. Cl. A61c *19/00*

U.S. Cl. 220—90 6 Claims

A dental cup for waste such as wads and pads of cotton wool, cement rests and the like, comprising a conical beaker

made of a plastic foil and having an outwardly projecting flange at its edge. In the flange, there are at least two raised hollow portions defining a V- or U-shaped recess to enable a



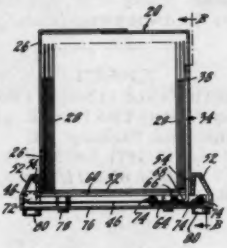
dental instrument to be applied in the recess and drawn rearwardly to scrape the waste against the edges of the recess.

3,765,565

DISPENSER CARTON AND HOLDER

Ivan A. Fietzer, Neenah; Edwin A. Filipowicz, Milwaukee, and Morris W. Kuchenbecker, Neenah, all of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 30, 1971, Ser. No. 176,153
Int. Cl. A47k *10/44*
U.S. Cl. 221—46 5 Claims



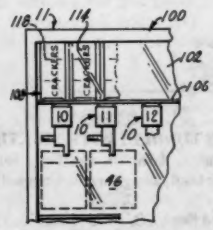
A dispensing carton for a stack of folded sheets and a base with a spring biased follower for urging the folded sheets toward a dispensing panel of the carton. The carton features a pair of laterally extending flanges on the bottom panel for frictionally locking the dispensing carton to the base.

3,765,566

VENDING MACHINE PRODUCT DISTRIBUTOR

Campbell K. Dasher, Marietta, Ga., assignor to Campbell K. Dasher, Jr., Marietta, Ga.

Filed Oct. 14, 1971, Ser. No. 189,300
Int. Cl. G07f *11/30*
U.S. Cl. 221—129 13 Claims



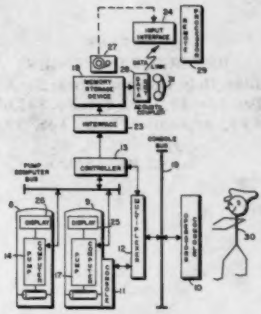
A locked vending machine cabinet has both bag distributing conveyor units and package vending units electrically operated by any acceptable coin receiving device. The bag distributor and conveyor unit comprises a chain with a plurality of clamps each clamping a bag in place between a fixed jaw and a movable segment spring biased in place. Each clamp advances one dispensing increment each time when the chain is driven by an electric motor switched by the coin device. A tripping means on the machine opens the clamp by moving the jaw at the proper moment accomplished through timing of the electric motor switch and movement of the chain and the bag drops from the dispensing opening in the machine. After traveling past the tripping point and dispensing the bag the retainer returns in the opposite direction with the chain and may be reloaded. Dispensing of the bag is assured by means of a wiper arrangement which is a spring biased arcuate segment tripped into place in timed sequence to positively wipe the bag from the open jaw thereby preventing any chance of hanging. Packages of cookies or crackers in the same machine are dispensed from units (somewhat like cartridges from a clip) pushed forward by means of a dispensing pusher arm actuated by a timed motor drive responsive to the coin device and given positive motion by means of a constant tension spring.

3,765,567

FLUID DISPENSING DATA PROCESSING SYSTEM

Joseph Maiocco, West Covina; Fred Maiocco, Dracaena, and Howard J. Jelinek, Balboa Island, all of Calif.

Filed July 23, 1971, Ser. No. 165,076
Int. Cl. B65d *5/30*
U.S. Cl. 222—30 11 Claims



A fluid dispensing data processing apparatus and system comprising electronic transducers, logic networks, shift registers, multiple digital counters, and transaction sequencers which generate, format, store and validate fluid pump transaction data such as total gallons dispensed, cost per gallon, and the total cost of a transaction. Provision is made for entering sales information not related to fluid dispensing operations, verifying all data, and preparing a hard copy receipt for dispensing to the customer. Provision is also made for incorporating a credit card verification system, and interfacing the system with a regional accounting computer.

3,765,568

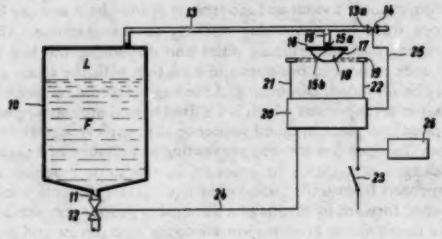
METHOD AND APPARATUS FOR AUTOMATICALLY METERING PREDETERMINED VOLUMINA OF A LIQUID

Walter Leifermann, Pelostrasse 23, Hamburg, Germany

Filed Oct. 7, 1971, Ser. No. 187,386
Claims priority, application Germany, Oct. 10, 1970, P 20 49 784.1; May 29, 1971, P 21 26 967.0; June 5, 1971, P 21 28 099.9; June 20, 1971, P 21 36 104.6
Int. Cl. B67d *3/00*
U.S. Cl. 222—56 9 Claims

A method of automatically metering predetermined volumina of a liquid by arranging the liquid within an airtight en-

closure and controlling, in a dispensing operation, the outlet valve by the resulting mechanical deformation of a diaphragm that is in communication with the enclosure and deformable by air pressure variations of the air entrapped within the



system. The apparatus essentially comprises a sealed reservoir with an outlet valve, a diaphragm in communication with the reservoir and a sensing device for sensing deformations of the diaphragm to control the outlet valve. An optional timer may provide a no-liquid condition signal.

3,765,569

BEVERAGE DISPENSER

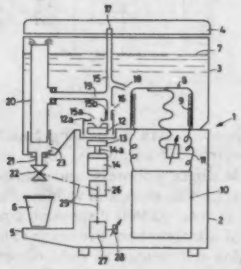
Tito Rimini, Milan, Italy, assignor to Bras S.p.A., Milan, Italy

Filed Apr. 10, 1972, Ser. No. 242,607

Claims priority, application Italy, Apr. 13, 1971, 21521 B/71

Int. Cl. B67d *5/08*

U.S. Cl. 222—70 **7 Claims**



A beverage dispensing machine is disclosed of the kind comprising a container, a faucet and a timer for the opening time of the faucet, in which the improvement consists of the provision of a standpipe or tube extending vertically in the container and connected to the faucet, the top end of the vertical tube being at a level above the maximum level in the container, said tube being connected, in turn, with the delivery duct of a pump whose suction duct communicates with the container, the rate of flow of the pump being greater than that of the faucet. The advantage is a greater accuracy in the beverage volumes dispensed and the possibility of dispensing through metering vessels installed within the machine. It is sufficient to adjust the timer in order to regulate the individually dispensed volumes of the beverage concerned.

3,765,570

DEVICE FOR DISCHARGING A HOPPER BARGE

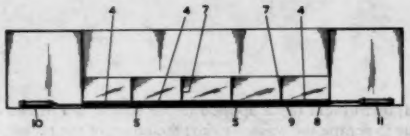
Robert DeGroot, Kinderdijk, Netherlands, assignor to N.V. Industrieele Handelscombinatie Holland, Rotterdam, Netherlands

Filed July 22, 1971, Ser. No. 165,124

Claims priority, application Netherlands, July 22, 1970, 7010845

Int. Cl. B67d *5/60*

U.S. Cl. 222—132 **6 Claims**



A hopper barge with a plurality of discharge openings spaced apart longitudinally along its bottom has a valve for each opening, the valves being interconnected in a series for simultaneous movement lengthwise of the barge. The valves are actuated by wedges and abutments to move, when closing, first horizontally and then upwardly, and when opening, first downwardly and then horizontally. Hydraulic jacks at opposite ends of the series operate alternately so that the series is always in tension when moving. The discharge openings are bordered by resilient sealing strips that extend toward the valves and that are faced with a wear-resistant material.

3,765,571

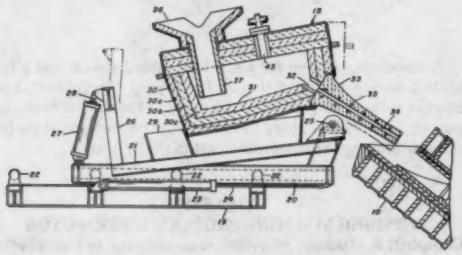
PRESSURIZED TILTABLE TUNDISH CONSTRUCTION

Richard E. Lyman, Country Club Hills, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,403

Int. Cl. B22d *11/10*

U.S. Cl. 222—166 **4 Claims**



A tundish formed as a fully enclosed refractory-lined vessel for feeding molten metal to a continuous-casting machine. Particularly useful with inclined-mold casting machines. The vessel is mounted to tilt and has a nozzle in the bottom and a funnel in the top. The vessel is pressurized through a dynamic pressure regulator which controls the effective head at the nozzle.

3,765,572

ROTATABLE TUNDISH WITH MULTIPLE OUTLETS

Friedhelm Neumann, Adliswil, and Fritz Willim, Birmensdorf, both of Switzerland, assignors to Concast AG, Zurich, Switzerland

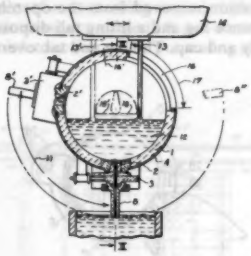
Filed Sept. 18, 1970, Ser. No. 73,453

Int. Cl. B67d *5/12*

U.S. Cl. 222—167 **4 Claims**

A rotatable tundish for the continuous casting of steel is provided with at least two outlet openings through which mol-

ten metal may be supplied to the casting mold, said outlet openings being angularly displaced so that while one opening



is located in pouring position, the other is located in stand-by position above the level of the molten metal in the tundish.

3,765,573

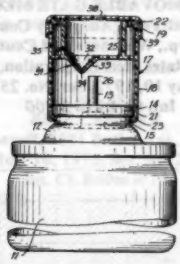
ACTUATING CAP FOR AN AEROSOL DEVICE

Irving Landsman, 365 Central Park Ave., Yonker, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,787

Int. Cl. B65d *83/14*

U.S. Cl. 222—182 **8 Claims**



This invention relates to a device for dispensing a liquified gas propellant including one or more active ingredients such as is used for insecticides or exterminating purposes. More particularly, the device, which is commonly known as an "Aerosol Bomb", comprises a container of conventional type having a discharge nozzle which is actuated by pressing or tilting to release the contents of the container as a spray. The container has an annular flange near its upper end to which a cap is releasably connected. The cap has a transversely extending wall between its ends which is longitudinally displaced more from one end of the cap than from the other, so that in one position of the cap on the flange, the transverse wall will be spaced from the nozzle and in the reverse position of the cap, the transverse wall will abut against the nozzle to actuate the latter to release the pressurized contents of the container through an aperture in the transverse wall.

3,765,574

CONTAINER FOR LIQUIDS

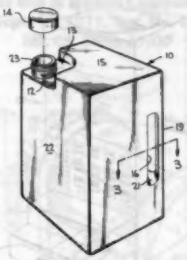
Ignacio S. Urquiza, Mexico City, Mexico

Continuation of Ser. No. 111,581, Feb. 1, 1971. This application Feb. 16, 1973, Ser. No. 333,016

Int. Cl. B67d *5/06*

U.S. Cl. 222—183 **4 Claims**

A container for liquids which comprises a plastic case having a configuration suitable for easy stacking, a handle disposed within the outer dimension of the case, and a plastic bag inside the case which may be filled at its open end and



emptied at its opposite end after being opened through an open neck portion at said opposite end.

3,765,575

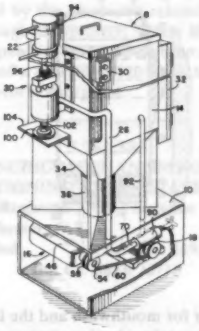
INJECTION MACHINES FOR WICKING MATERIAL

Martin L. Abel, 25235 Canterbury, Franklin, Mich.

Filed Mar. 25, 1971, Ser. No. 128,074

Int. Cl. G01f *11/00*

U.S. Cl. 222—227 **4 Claims**



An injection machine accurately meters a quantity of lubricated wicking material to be injected during operation of the machine. The lubricated wicking material is advanced through the machine by a reciprocating piston driven by a motor through a belt drive and power transmission. The power transmission is separately lubricated and a reciprocating piston is connected thereto so as to prevent commingling between the power transmission lubricant and the lubricated wicking material. Metered quantities of unadulterated wicking material are thereby supplied to be injected by the machine while the power transmission lubrication is not contaminated by the wicking material.

3,765,576

APPARATUS FOR DISPENSING PHOTOGRAPHIC CHEMICALS

Roy Ramsdale, 78 Munro Blvd., Willowdale, Ontario, Canada

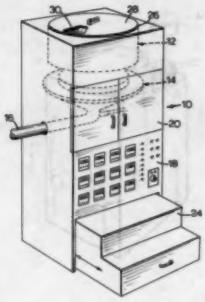
Filed Apr. 10, 1972, Ser. No. 242,358

Int. Cl. B67d *5/62*

U.S. Cl. 222—132 **8 Claims**

A device for dispensing liquid photographic chemicals, in which a plurality of containers are disposed in a circle, each

container having an outlet leading downwardly into a covered frustro-conical bowl disposed below the containers, the bowl having a central outlet conduit. Valve means control the flow



individually from each container into the bowl. Valve controlled ducts also lead into the bowl for connection with a source of pressurized liquid such as rinse water.

3,765,577

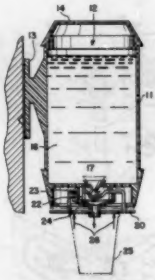
LIQUID DISPENSER

Robert J. Burns, Jr., 112-20 72nd Dr., Forest Hills, N.Y.

Filed Aug. 11, 1972, Ser. No. 280,024

Int. Cl. B67d *25/38*

U.S. Cl. 222—501 **3 Claims**



A liquid dispenser for mouthwash and the like comprising a cylindrical storage container having a covered filling opening at one end thereof, and a liquid outlet aperture disposed at the other end thereof for admitting liquid from the container to an outlet funnel disposed below the aperture. A conically-shaped plug is slidably disposed in the outlet aperture to regulate the outflow of liquid therefrom, and is coupled to an annular ring-shaped member disposed below the storage container and the outlet funnel. When a cup engages and moves the annular-shaped member upwardly, the conically-shaped plug is removed from the aperture, and the liquid flows through the aperture and the outlet funnel into the cup. When the annular member is released, the plug is forced back into the aperture, and stops the flow of liquid from the storage container.

3,765,578

TWIST RELEASE SAFETY CAP

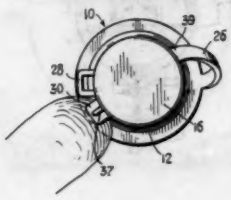
Morton B. Stull, c/o Stull Engraving Company, 221 Banta Ave., Garfield, N.J.

Filed Aug. 28, 1972, Ser. No. 284,430

Int. Cl. B65d *47/00*

U.S. Cl. 222—546 **14 Claims**

A safety cap for hand-held dispensers, comprising a tubular cap body having a top discharge opening, a captive closure cap adapted to fit over the opening of the cap body so as to seal the same, cooperable yieldable detent means on the cap body and cap tending to hold the latter firmly on the body, in sealing position, a flexible hinge web structure connecting the cap body and cap for holding the latter captive while enabling it to be swung from the sealing position closing off the body to a discharge position removed from the opening of the body, and an interference lug and a lifting tab disposed respectively on the cap body and cap. The lug and tab overlie and register



with each other when the cap has been swung about the web structure and forced down to its sealing position on the body. In the sealing position, the cap can be turnably shifted on the body within limits determined by the web structure, which is sufficiently long to enable the user to bring the lifting tab of the cap out of registration with the interference lug on the cap body, whereby the user's finger can then be applied to the underside of the lifting tab for the purpose of removing the cap.

3,765,579

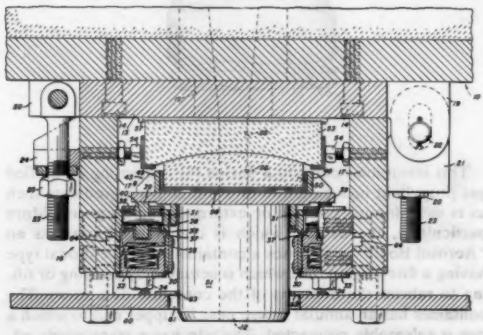
LINEARLY MOVABLE GATE MECHANISM

Fred C. Cramer, Scott Twp., Allegheny County, and Calvin E. Kelly, Franklin Twp., Westmoreland County, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,990

Int. Cl. B22d *37/00*

U.S. Cl. 222—512 **2 Claims**



A gate mechanism for controlling flow of material from the outlet of a bottom pour vessel. The gate is supported on spring-pressed antifriction rollers, and moves linearly between pouring, throttling and closed positions.

3,765,580

GARMENT DEWRINKLING PROCESS AND APPARATUS

Jay M. Wilsker, Englewood Cliffs, N.J., and Samuel H. Miranker, Brooklyn, N.Y., assignors to Automatic Steam Products Corp., Long Island, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,096

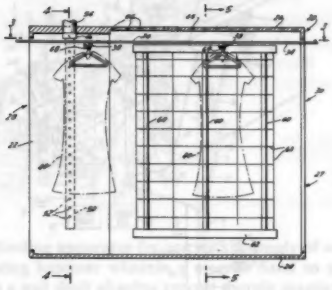
Int. Cl. D06c *15/00*

U.S. Cl. 223—52 **7 Claims**

A garment finishing system adapted to provide dewrinkling of garments is described in which the garment is conveyed through a radiant heat energy zone which is effective to

rapidly heat the garment and cause the fabric fibers to revert to their natural wrinkle-free condition.

In a preferred embodiment of the invention, the heating elements comprise a bank of infrared heating elements disposed on opposite sides of a processing tunnel through which garments are continuously conveyed. A pre-steaming operation provided at the inlet section of the processing tunnel enhances



the subsequent dewrinkling by radiant heat energy but in many cases is unnecessary. The use of radiation heating eliminates many of the problems associated with prior hot air blowing systems and in addition enables the use of plastic shipping hangers without distortion thereof. The process gives good results with a variety of fabric compositions but is particularly effective in restoring to a wrinkle-free condition garments having "memory retention."

3,765,581

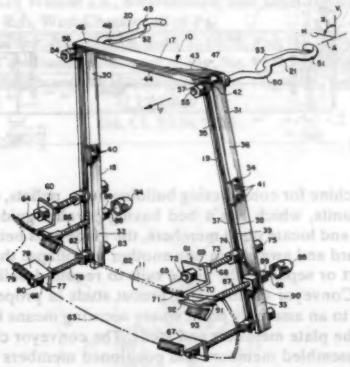
BIKE CARRIER

Irving William Kosecoff, 3201 Butler Ave., Los Angeles, Calif.

Filed July 10, 1972, Ser. No. 270,320

Int. Cl. B60m 9/10

U.S. Cl. 224—42.03 B **11 Claims**



A bike carrier has a generally U-shaped frame constituted by a pair of downwardly diverging struts whose upper ends are coupled to a relatively low-slung cross brace. Projecting rearwardly from the cross brace is a pair of hangers configured with sets of plural retaining bends which are angled inwardly towards one another to accept and support the V-frame of a bike.

Adjustable clamping assemblies are coupled to the lower portions of both struts to secure the U-shaped frame to vehicle bumpers of various sizes and shapes.

3,765,582

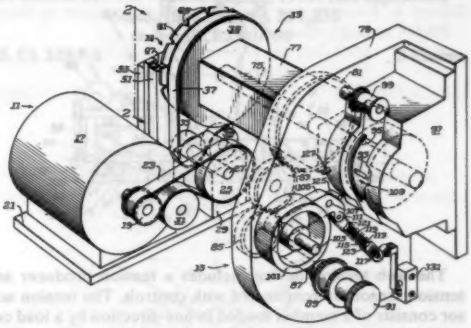
SYNCHRONIZED GENERATOR FOR A PHOTOGRAPHIC FILM PRINTER

Andrew Balint, Park Ridge, and Willi G. Engel, Evanston, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,733

Int. Cl. B65h 25/00

U.S. Cl. 226—9 **10 Claims**



A motor drives a pulse generating detent disc through a power transmission train. The detent disc is coupled to a film drive sprocket and the sprocket draws the film across the exposure aperture of the printer. The detent disc defines a plurality of apertures which permit light to pass through onto a photocell so that as the disc and the sprocket are rotated pulses are generated by the photocell related to the amount of film passing through the printer. When the printer aperture gate is opened a pawl is forced against the detent disc causing it to lock in one of a plurality of preselected detent positions until the drive motor is energized.

3,765,583

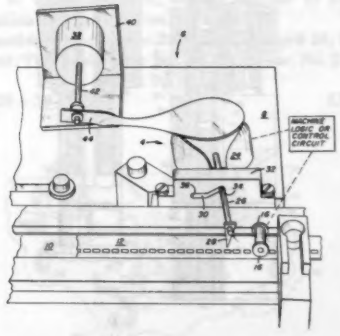
FILM ADVANCING MECHANISM FOR PRECISELY POSITIONING A PERFORATED WEB

Alva F. Mathes, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed , Ser. No. 249,329

Int. Cl. B65h 23/16

U.S. Cl. 226—36 **8 Claims**



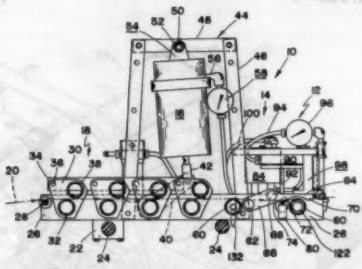
A film advancing mechanism for advancing a film containing perforations to a precise final position at an operating station, such as a splicing station. The film is initially transported by a suitable transport mechanism to an initial position in which it is located approximately .010 to .40 inches short of the precise final position. The film advancing mechanism advances the film from the initial position to within substantially plus or minus .005 inch of the final position.

3,765,584

AUTOMATIC WEB TENSION CONTROL

E. Riley Rowe, Hartsville, S.C.

Filed Apr. 12, 1971, Ser. No. 133,066
Int. Cl. B65h 25/04
U.S. Cl. 226—39 9 Claims



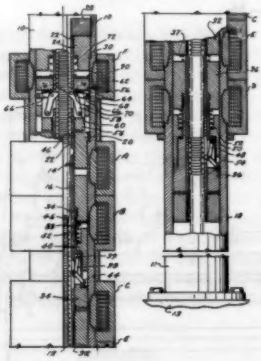
The web tension device includes a tension producer and tension sensor interconnected with controls. The tension sensor consists of a member loaded in one direction by a load cell and in the opposite direction by the tensed web. The position of the member is sensed by air escaping through a nozzle controlled by a "flapper" in a sensor arm. A plurality of bars actuated by an air cylinder produce the tension on the web through the interconnected controls. The control system utilizes air pressure supplied to the load cell through an orifice to an air relay and the sensor nozzle. Pressure not escaping from the nozzle is amplified in the relay which supplies air to the tension producing cylinder in the tension producer.

3,765,585

CONTROL ARRANGEMENT FOR SELF-CLOSING CONTROL ROD LATCHES

Christian William Ruoss, Enfield, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,445
Int. Cl. B65h 17/36
U.S. Cl. 226—59 7 Claims



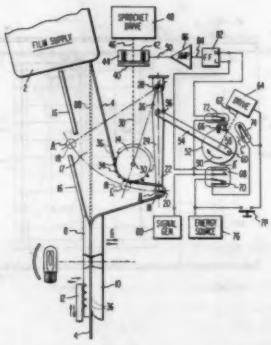
Control arrangement for a nuclear reactor non-scramming control rod drive of the magnetic jack type having a self-closing latch for preventing dropping of the rod in the event of loss of electrical power to the associated solenoids. The solenoid which actuates the self-closing latch is connected electrically in series with a solenoid which actuates a moveable gripper and the two are controlled as one. The two magnetic circuits associated therewith are designed to provide an overlap in operation which avoids the possibility of a dropped rod.

3,765,586

FILM HANDLING APPARATUS

Bjorn Fritjof Floden, Palmyra, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,352
Int. Cl. G03b 1/24
U.S. Cl. 226—84 6 Claims



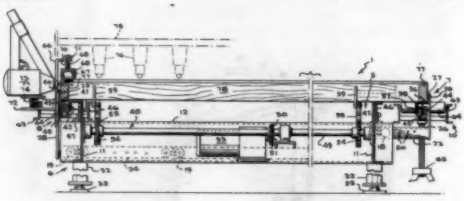
Apparatus for automatically providing film forming and guiding of a film in desired operative relation with a film transport assembly. This is accomplished through a position programmed member which is movable with respect to the elements of the film transport assembly.

3,765,587

BUILDING CONSTRUCTION MACHINE

Jack Davis, Bristol, Tenn.

Continuation-in-part of Ser. No. 110,196, Jan. 27, 1971, abandoned. This application Jan. 6, 1972, Ser. No. 215,824
Int. Cl. B27f 7/02
U.S. Cl. 227—100 20 Claims



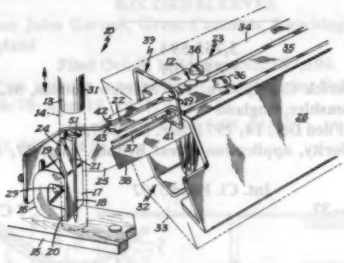
A machine for constructing building units, pallets, skids and similar units, which has a bed having parallel guide rails to support and locate plate members, the guide rails being movable toward and away from one another to collapse the unit for transport or separate the guide rails to required building unit height. Conveyor chains carry precut studs in proper spaced relation to an assembly point where securing means is located to join the plate members and studs. The conveyor chains advance assembled members and positioned members to be assembled progressively through the machine. Raw material supports and an exit conveyor are either slidably connected to the machine to be drawn out for use or provided as separate parts for use with the machine when set up. The plate guide rails have liftable flanges upon which positioning means for special assembly arrangements may be arranged. The collapsed machine may be transported from one building site to another by means of truck or trailer. The machine may be set up for use either horizontally or vertically. An automatic machine is also disclosed having progressive stud feed, controlled, floating staple gun operation and an improved staple gun bridge.

3,765,588

NAIL FEEDING APPARATUS

Elmer Frederickson, Box 7, Waubun, Minn.

Filed Feb. 7, 1972, Ser. No. 223,911
Int. Cl. B25c 1/00
U.S. Cl. 277—113 6 Claims



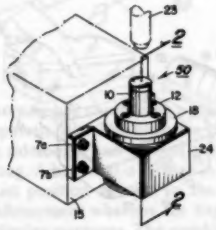
A nail feeding apparatus for use with a supply of nails and a reciprocating hammer wherein a magnet fixed to a receiver plate with a nail shaft aligning groove therein magnetically attracts to and retains successively arriving nails along the groove as they are supplied from a delivery means spaced from and confronting the receiver plate. Each nail is retained in nailing relationship while the hammer drives the nail into nailable material. The plate has an angled section thereon and is movably mounted relative to the hammer so that as the hammer strikes the angled section of the receiver plate the plate moves from a first position within the path of the hammer to a second position outside the path of the hammer, leaving the nail behind to be driven by the hammer without interference from the plate, the moving receiving plate triggering the release of a successive nail which is then attracted to the groove and seized by the magnet when the plate returns to first position.

3,765,589

WELDING APPARATUS

Thomas A. Walraven, 743 S. Matlock St.; Nicholas Maropis, 310 E. Rosedale Ave., both of West Chester; William C. Elmore, 525 Walnut Ln., Swarthmore, and Janet Devine, 1435 Hunter Rd., West Chester, all of Pa.

Division of Ser. No. 42,518, June 1, 1970, Pat. No. 3,695,500, which is a continuation-in-part of Ser. No. 717,295, March 29, 1968, abandoned. This application Oct. 18, 1971, Ser. No. 189,867
Int. Cl. B23k 1/06
U.S. Cl. 228—1 1 Claim



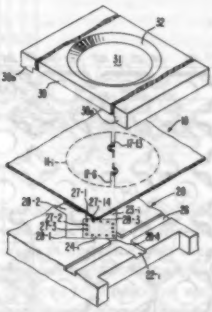
Apparatus and method are disclosed for welding metal members by means of vibratory energy. Reliability of such welding apparatus is improved by provision of an anvil designed for regulated response to excitation by an ultrasonically-powered sonotrode. The anvil is mounted in an assembly which contributes appropriate support, restraint and isolation.

3,765,590

STRUCTURE FOR SIMULTANEOUSLY ATTACHING A PLURALITY OF SEMICONDUCTOR DICE TO THEIR RESPECTIVE PACKAGE LEADS

Edward F. Duffek; Ernest J. Funk, both of Cupertino; Alfred S. Jankowski, San Jose; Jack C. Lane, Saratoga; William L. Lehner, Los Altos Hills; Floyd F. Oliver, Los Altos, and Mark Schneider, San Jose, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Division of Ser. No. 99,904, Dec. 21, 1970. This application May 8, 1972, Ser. No. 251,235
Int. Cl. B23k 1/00
U.S. Cl. 228—6 3 Claims



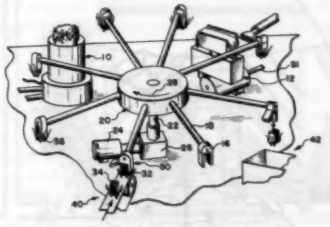
Semiconductor devices containing integrated circuits are attached directly to external package leads by pressing simultaneously a plurality of groups of leads against bonding pads on a plurality of face-up semiconductor dice and heating the composite structures. Solder bumps on the bonding pads contain hard pedestals which prevent the overlying leads from being pushed into the faces of the semiconductor devices while the solder on the solder bumps melts to form the bonds between the leads and the underlying semiconductor dice. The process for carrying out this operation lowers significantly the cost of each packaged semiconductor device and the resulting structure is more reliable than structures of the prior art.

3,765,591

WAVE SOLDERING ELECTRICAL CONNECTIONS

Lawrence E. Cook, Meriden, Conn., assignor to Dynamics Corporation of America, New York, N.Y.

Continuation-in-part of Ser. No. 138,651, April 29, 1971, abandoned. This application Jan. 19, 1972, Ser. No. 219,036
Int. Cl. B23k 1/08
U.S. Cl. 228—36 13 Claims



Wire connectors are wave soldered to a terminal by moving mechanically connected insulated wire and depending terminal connectors in a fixed plane progressively through a flux bath and then through a bidirectionally flowing molten solder bath for a time-heat cycle effective to burn off the insulation and solder bond the elements. The work pieces may be moved

in a circular path or moved along a guiding divider which shields the remaining parts of the work piece from flux splatter in a clean cooling dispersing atmosphere or a blast of cooling air may be used to scavenge and return to the bath surplus molten solder from the soldered elements as they leave the bath.

3,765,592

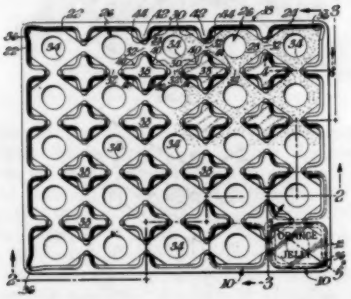
PACKAGING TRAY

Gilbert R. Chadbourne, Oakland, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed July 26, 1971, Ser. No. 166,073

Int. Cl. B65d *1/26*

U.S. Cl. 229—2.5 **4 Claims**



Unitary molded packaging tray carries individual portion cups and is nestable with tray of like configuration. Tray comprises substantially flat bottom wall with upwardly and outwardly flaring side wall extending from bottom wall. Individual compartments are constructed and arranged to receive portion cups, each compartment having bottom portion with spaced apart plateaus raised therefrom for supporting portion cup above bottom portion of compartment. At least one broad flat bottom wall segment extends between each adjacent pair of compartments and is contiguous with bottom portions thereof so that when trays filled with portion cups are stacked one above the other broad flat bottom wall segments of upper tray in stack rest upon outer periphery of portion cups in tray directly therebelow in stack.

3,765,593

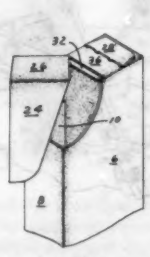
CARTON HAVING DIAGONAL FLIP-TOP CORNER CAP

Joseph R. D'Alessio, Lunenburg, Mass., assignor to Rand-Whitney Packaging Corporation, Leominster, Mass.

Filed Aug. 13, 1971, Ser. No. 171,437

Int. Cl. B65d *5/66, 5/54*

U.S. Cl. 229—17 R **9 Claims**



A diagonal flip-top carton structure formed by a one-piece blank with four body panels having a corner opening provided by a recessed upper front corner edge and adjacent recessed side panel end edge, a rear panel portion adjacent said opening being hinged diagonally of said corner and carrying a corner cap assembly of partial body and end panel portions to swing to and from hooded covering relation at said corner. The end panel portions of the cap assembly are initially linked to stationary end panel portions of the front and rear panels by severable tear lines for a break-a-way sealed condition of the carton.

3,765,594

CARTON

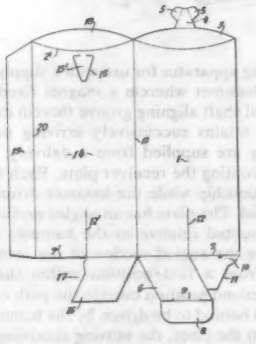
Ronald Frederick Cramphorn, 121 Marlow Bottom, Marlow, Buckinghamshire, England

Filed Dec. 14, 1971, Ser. No. 207,811

Claims priority, application Great Britain, Aug. 27, 1971, 40,246/71

Int. Cl. F65d *5/02*

U.S. Cl. 229—37 **7 Claims**



According to the present invention a tubular carton has, in its erected condition, one end of substantially parallelogrammic cross-section and closable by at least one flap hinged on an end edge of the body of the carton, the other end being of oval-bail shaped cross-section and being closable by at least one flap hinged on an end edge of the body of the carton.

3,765,595

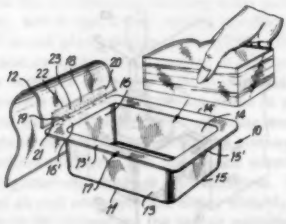
HEAT SEALED FOOD CONTAINER

Daniel Bernhardt, c/o Q-P Inc., 406 N. Midland Ave., Saddle Brook, N.J.

Filed July 13, 1971, Ser. No. 162,035

Int. Cl. B65d *5/64*

U.S. Cl. 229—43 **3 Claims**



A heat sealable food container comprising a generally rigid plastic tray of substantial depth surrounded by a peripheral framing flange, all portions of said flange being disposed in a common plane. A flap member is integrally formed with one said portion of said flange, the flap being connected to said flange by a weakened hinge-tear line optionally defined by a series of partial or complete perforations or a thinned fold

portion. A heat sealable transparent sheet is adhesively or heat sealingly connected to the upper surface of said flap, the sheet being of a size adapted to register with and form a cover for said flange.

3,765,596

RECORD SLEEVES

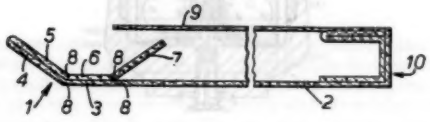
Norman John Garrod, Great Common, Bletchingley, Surrey, England

Filed Oct. 8, 1971, Ser. No. 187,694

Claims priority, application Great Britain, Oct. 22, 1970, 50,250/70; Apr. 15, 1971, 9,567/71

Int. Cl. B65d *5/66, 85/30*

U.S. Cl. 229—44 R 6 Claims



A record sleeve is provided with spines on at least the closed edges of the sleeve adjacent the open edge and a closure for closing the open sleeve edge, wherein the closure is formed by a flap folded on itself to provide a double thickness spine for spanning the open sleeve edge, a double thickness closure flap for underlying the other panel when the closure is in closed position and a marginal flap overlying the inner surface of the one panel adjacent the fourth edge thereof, the two thicknesses of the closure flap being adhered together and the two thicknesses of the spine and the marginal flap being relatively movable.

3,765,597

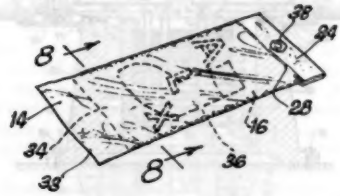
ARTICLE CARRYING BAG AND METHOD FOR ITS PRODUCTION

Bernard F. Brieske, Palatine, Ill., assignor to Vision Wrap Industries, Inc., Palatine, Ill.

Filed Sept. 28, 1971, Ser. No. 184,539

Int. Cl. B65d *33/16*

U.S. Cl. 229—62 3 Claims



An article carrying bag comprising a pigmented film and an overlying transparent film. The films are heat sealed together along adjoining side edges and each of the films are folded at one end of the bag. A heat seal is formed in the four-ply folded area at an offset position relative to the bag edge thereby providing re-enforcement whereby the bag can be efficiently suspended for display purposes. The combination of the transparent and pigmented sheets provides a viewing window and background for the most desirable display of articles included in a bag. The bags are manufactured by a method which includes the movement of overlying transparent and pigmented sheets through a folding machine whereby a narrow four-ply portion can be efficiently formed by means of a hot wire stationed so that heat will be transferred to the film for sealing the four plies of film together.

3,765,598

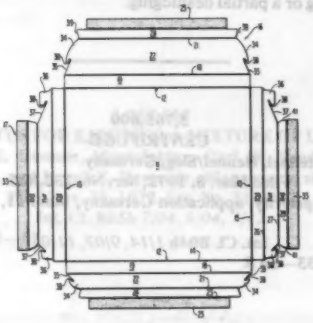
HOLLOW WALLED CARTON

Charles W. Rosenburg, Jr., North Tonawanda, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,393

Int. Cl. B65d *5/22*; G09f *1/12*

U.S. Cl. 229—34 HW 3 Claims



A carton constructed of a single folded cardboard blank having hollow wall units along the periphery thereof, means on each of the walls at opposite ends thereof for interlocking adjacent walls together, said locking means being located on the upper wall portions of the hollow wall units and being so arranged as to require opposing ones of hollow wall units to be moved inwardly and subsequently outwardly to effect the interlock between adjacent walls. Moreover, the spacing between the lower ends of the inner and outer walls of each wall unit is slightly less than the width of the respective top wall of the unit, thereby permitting the item stored within the carton to be snugly held in place during shipment.

3,765,599

SELF CLEANING CENTRIFUGE DRUM WITH STEPWISE VARIABLE CLOSING PRESSURE

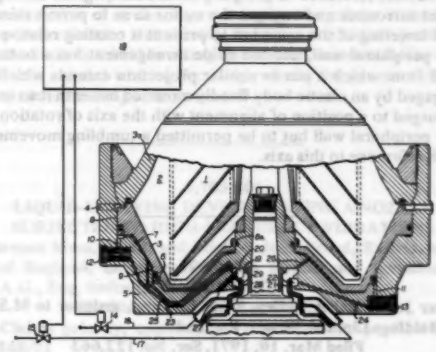
Heinrich Hemfort, Oelde, Germany, assignor to Westfabia Separator AG, Oelde/Westf., Germany

Filed Sept. 29, 1971, Ser. No. 184,887

Claims priority, application Germany, Oct. 2, 1970, P 20 48 429.1

Int. Cl. B04b *11/00*

U.S. Cl. 233—20 A 3 Claims



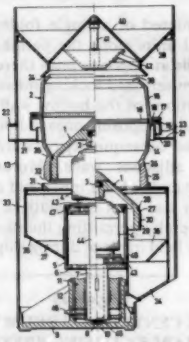
A centrifugal separator constructed for performing full desludgings as well as partial desludgings during separation. One end member of the separating chamber is a piston valve movable axially to open and close sludge discharge openings disposed at the outer periphery of the drum. The axially out-

ward disposed side of the piston valve is in sliding sealing engagemenet with confronting drum portion at radially spaced intervals so that a radial succession of divisions of the closing chamber is provided which can be filled up in a known manner with control fluid and selectively emptied for reducing the force acting on the piston valve and thereby performing a full desludging or a partial desludging.

3,765,600
CENTRIFUGE

Richard Steimel, Hennef/Sieg, Germany

Filed Mar. 8, 1972, Ser. No. 232,825
Claims priority, application Germany, Mar. 11, 1971, P 21 11 712.4
Int. Cl. B04b *1/14, 9/02, 11/05*
U.S. Cl. 233—20 R **12 Claims**



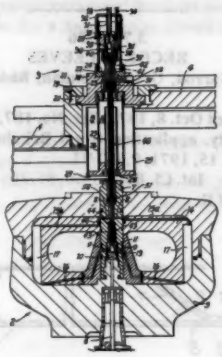
An upright centrifuge has an annular peripheral wall arranged for rotation about a vertical axis and having an open lower end, and a bottom wall adjacent the lower end and movable into and out of sealing engagement with the same. A motor is located beneath the bottom wall and carries the same, the motor with the bottom wall being movable up and down with reference to the peripheral wall. A guide arrangement surrounds and engages the motor so as to permit raising and lowering of the same but to prevent it rotating relative to the peripheral wall, and the guide arrangement has a bottom wall from which a pin or similar projection extends which is engaged by an elastic body fixedly mounted beneath it so as to be urged to a position of alignment with the axis of rotation of the peripheral wall but to be permitted a tumbling movement with reference to this axis.

3,765,601
CENTRIFUGE

Peter James Baker Gulley, Kent, England, assignor to M.S.E. Holdings Limited, Sussex, England

Filed Mar. 10, 1971, Ser. No. 122,663
Claims priority, application Great Britain, Mar. 10, 1970, 11,491/70
Int. Cl. B04b *1/00*
U.S. Cl. 233—28 **7 Claims**

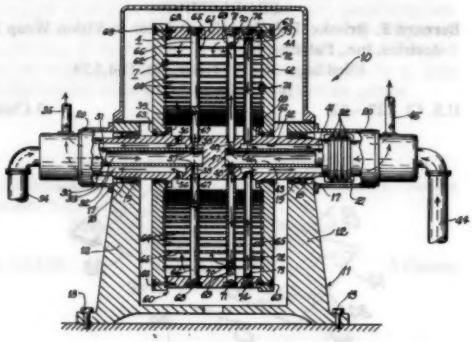
A fluid feed head for supplying fluid to and removing fluid from a rotating centrifuge rotor, comprising two coaxial rotating feed tubes one of which is subjected to the axial sealing forces of the head whilst being substantially isolated from the torsional forces between the rotor and head and the other of which tubes is mounted so as to be held against rotation with respect to the rotor and the rotary portion of the head whilst being movable axially.



3,765,602
SEALING ARRANGEMENT FOR A CENTRIFUGE

Collin M. Doyle, and Wladzia G. Podbielniak Doyle, Chicago, Ill.

Filed Sept. 3, 1970, Ser. No. 69,384
Int. Cl. B04b *1/00*
U.S. Cl. 233—31 **14 Claims**



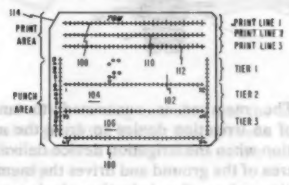
A centrifuge has a shell and a pair of plates for attachment to the ends of the shell. An annular channel is formed in at least one of the plates or in the shell adjacent an end thereof, for receiving a transversely deformable cord. When the shell and the plate are assembled and suitable fastening means are tightened, the cord deforms to provide a very effective seal which is so thin as to be able to withstand the high pressures developed in the centrifuge. The other end plate may be secured in a similar fashion. Also, when the centrifuge is constructed to be of the countercurrent exchange variety, the end plates respectively have pluralities of axially aligned grooves within which are disposed transversely deformable cords. Cylindrical, apertured separator bands are respectively disposed in axially aligned pairs of the grooves. The cords are deformed when the end plates are drawn together by tightening the fastening means.

3,765,603

DATA RECORDER AND VERIFIER

Donald E. Bean; James T. Engh; James R. Hammer; John J. Igel, all of Rochester; Myron D. Schettl, Oronco; Harry J. Tashjian, and Richard J. Ullmer, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 845,817, July 29, 1969, Pat. No. 3,642,197.
This application Jan. 28, 1971, Ser. No. 110,583
Int. Cl. G06k 1/14
U.S. Cl. 234—34 6 Claims



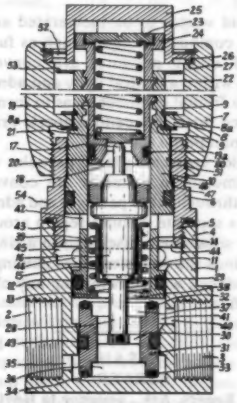
A data recorder for punching document cards which are of the type having three tiers into which encoded data may be punched, the system including a keyboard on which characters are entered serially, a magnetostrictive delay line constituting a storage device for storing encoded data from the keyboard in such serial form, and circuitry for actuating punches from spaced characters in the storage device so that a plurality of aligned columns in the plurality of tiers may be punched simultaneously. The data recorder includes printing mechanism for printing the data in corresponding tiers, and the same machine includes circuitry for verifying a punched document card utilizing the same keyboard as that used for punching.

3,765,604

MIXING FAUCET

Denis Trubert, 6 Avenue de General Gouraud, and Michel Trubert, 18 rue Jules Herbron, both of Viroflay, France

Filed Mar. 7, 1972, Ser. No. 232,594
Claims priority, application France, Mar. 9, 1971, 7108113
Int. Cl. G05d 23/13
U.S. Cl. 236—12 R 4 Claims



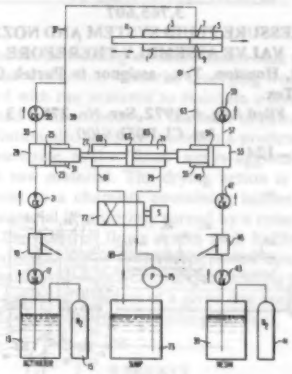
This faucet for delivering from a supply of hot and cold fluids a mixed fluid having any desired output at a preset, substantially constant temperature comprises a thermostatic capsule responsive to the temperature of the mixed fluids for more or less closing the hot fluid inlet and/or the cold fluid inlet by means of a spool valve engaging on the one hand a fixed seat and on the other hand a movable seat responsive to said capsule. The arrangement is such that the complete unit comprising all the movable component elements of the faucet can be removed as a unit by using a simple, conventional spanner.

3,765,605

APPARATUS FOR EJECTING A MIXTURE OF LIQUIDS

Frederick E. Gusmer, Mantoloking; Carl W. Sundberg, Jr., Chatham, and Joseph E. Hayes, Jr., Manasquan, all of N.J.

Filed Nov. 30, 1972, Ser. No. 310,947
Int. Cl. B05b 7/04, 9/04, 7/12
U.S. Cl. 239—61 5 Claims



Two mutually reactive liquids, such as the components of a polyurethane foam, are mixed together and ejected onto a substrate by means of apparatus that pumps the liquids separately and remotely mixes them only at the last moment. Heretofore, the liquids were separately pumped by means of parallel reciprocating proportioning pumps to which the liquids are fed under pressure; and as a result of this feed pressure the outlet pressure of the pumps varied with respect to the direction of stroke. By rearranging the pumps in tandem opposed relation, and driving them by a constant pressure motor such as a double-acting fluid motor, a counterbalancing effect is created which effectively reduces the pressure variation as the stroking action reverses.

3,765,606

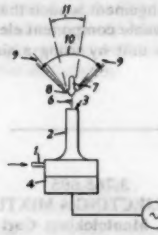
LIQUID-SPRAYING DEVICES HAVING A NOZZLE SUBJECTED TO HIGH-FREQUENCY VIBRATIONS

Norman Moss, Ilford, and Michael John Broad, Enfield, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed Mar. 27, 1972, Ser. No. 238,201
Claims priority, application Great Britain, Apr. 2, 1971, 8,548/71
Int. Cl. B05b 3/14
U.S. Cl. 239—102 4 Claims

In order to improve the fuel atomization obtained by a stepped-horn type ultrasonic fuel-jet atomizer nozzle, an impact surface body is placed into the path of the fragmented jet ejected from the nozzle. Preferably the impact body is arranged at the inlet end of a collector tube by which the fluid of

the jet from the nozzle is withdrawn when the vibrator for the ultrasonic nozzle is not energized, and by its shape and angular



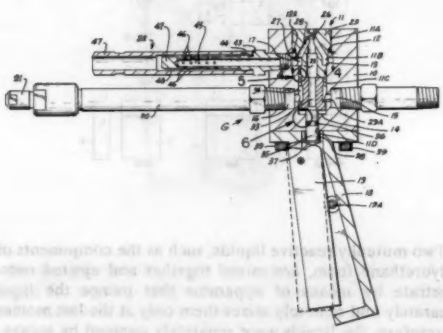
displacement relative to the jet axis, the direction and shape of the resultant spray of the droplets can be determined.

3,765,607

HIGH PRESSURE FLUID SYSTEM AND NOZZLE AND VALVE ASSEMBLY THEREFORE

Amos Pacht, Houston, Tex., assignor to Partek Corporation, Houston, Tex.

Filed Aug. 4, 1972, Ser. No. 278,113
Int. Cl. B05b 9/00
U.S. Cl. 239—124 **19 Claims**



A fluid system for supplying a high pressure stream of fluid is disclosed in which a novel, hand-held nozzle and valve assembly is provided for controlling the flow of fluid from a high pressure pump to a nozzle. The assembly includes a valve housing having a pressure relief or dump outlet and a valve member which is movable between a position in which fluid is dumped or relieved through the pressure relief outlet to a position where substantially all of the fluid flow is through the nozzle. A flat, fluted valve member is utilized to minimize wear, and misalignment and to conserve space. Means, such as a muffler, is provided for diverting the fluid flowing through the pressure relief outlet in such a manner to substantially reduce kick of the assembly when the pressure in the valve housing is relieved. The assembly is also arranged to permit use of different types of operating handles with the same valve housing.

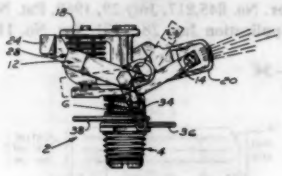
3,765,608

AUTOMATIC INTERMITTENT BREAK-UP DEVICE

James F. Lockwood, Wilton Manors, Fla.

Filed Apr. 11, 1972, Ser. No. 243,007
Int. Cl. B05b 3/08
U.S. Cl. 239—230 **7 Claims**

An automatic intermittent break-up device repeatedly movable toward the center of the fluid stream exiting a nozzle to a first position to increase the break-up of the stream and movable away from the center of the fluid stream exiting the nozzle to a second position to decrease the break-up. The increased break-up sequence of operation provides a more desired distribution of fluid on the surface area. The intermittent break-up device includes an adjustable break-up member



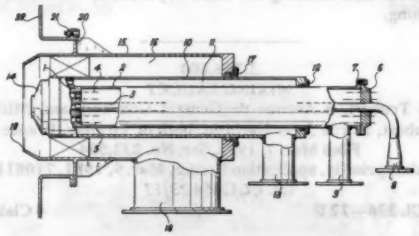
or screw. The member is connected to an automatic mechanism of an irrigation device to drive the member into the first position when the irrigation device delivers fluid over a particular area of the ground and drives the member into the second position when the irrigation device subsequently delivers fluid over the said particular area of the ground.

3,765,609

EMULSION BURNER

Gabriel Robic, Paris, France, assignor to Elf Union S.A., Paris, France

Filed May 31, 1972, Ser. No. 258,429
Claims priority, application France, June 1, 1971, 7119708
Int. Cl. B05b 7/10
U.S. Cl. 239—405 **5 Claims**



Sludges or liquid wastes to be incinerated and containing small particles, a combustible liquid such as fuel oil, and an atomization fluid under pressure, are conveyed through separate passages within a central body and admitted in gyratory motion into a frontal chamber so as to form an emulsion which is discharged through a central nozzle orifice around a stationary cone-point pintle.

Sludges or liquids containing large particles which can attain several millimeters in diameter are conveyed with an atomization fluid through other passages and admitted in gyratory motion into a separate annular region around the emulsion chamber for subsequent discharge in a ring-shaped pattern which surrounds the emulsion, thus guiding and stabilizing the flame produced while preventing any clogging of the central nozzle orifice.

3,765,610

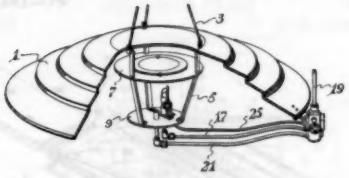
BURNER

Orville C. Schell, Rogers, Ark., assignor to Hoyt Corporation, Rogers, Ark.

Filed Dec. 20, 1971, Ser. No. 209,632
Int. Cl. B05b 7/12
U.S. Cl. 239—426 **1 Claim**

A burner, particularly for use with a poultry brooder, is supported on a burner pan and comprises a separable nozzle and

mixing chamber, the nozzle having a tapered reduced throat and the mixing chamber being enlarged and having air inlets about its periphery. A reduced portion of the nozzle fits within



the upper end of the mixing chamber and the nozzle and the mixing chamber grasp the burner pan between them. A fitting with an orifice is secured in the bottom of the mixing chamber for the gas supply.

3,765,611

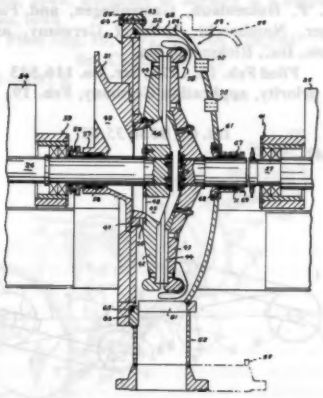
REFINING PROCESS

Herman W. Steiniger, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Continuation of Ser. No. 108,882, Jan. 22, 1971, abandoned. This application Aug. 7, 1972, Ser. No. 278,374

Int. Cl. B02c 7/06

U.S. Cl. 241—18 **10 Claims**



A process of refining pulp type materials utilizing a double revolving disc refiner characterized by introducing said materials into a double revolving disc refiner while maintaining the same under sealed pressurized conditions and subjecting the materials within said refiner to passage between opposed refining surfaces, each of which rotates relative the other with a spacing therebetween not less than about 0.04 inches and from about 0.04 to 0.10 inches, while subjecting said materials to elevated pressures and correspondingly elevated temperatures, and, in movement between said refining surfaces, inducing said materials to form into fiber bundles and individual fibers in a manner to gently produce a separation of the constitutent components of the materials and issue the materials in a form wherein the fibers are relatively long and relatively unscarred.

3,765,612

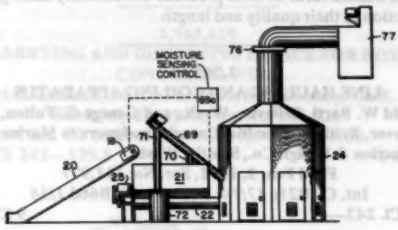
DRIER FOR BULK MATERIAL

Harvey M. Wenger, Holland, Mich., assignor to Organic Pollution Control Corporation, Grand Haven, Mich.

Continuation-in-part of Ser. No. 846,455, July 31, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,038

Int. Cl. B02c 21/00

U.S. Cl. 241—23 **25 Claims**



A machine for converting moisture-laden bulk material into dried granular condition. Material emerging from the drying area is mixed with raw material to maintain a consistency and density related to the capacity of the drier to extract moisture. The recirculation also tends to maintain a predetermined particle or granule size, as the "fines" are re-agglomerated in the mixing with raw material. The drying action is provided by supplying heat to a chamber containing baffles over which pulverized material is uniformly spread by a rotary distributor whereupon the material flows across such baffles by gravity assisted by vibration. The material is hurled upwardly to the uppermost baffles through a central duct leading from the pulverizer, and particles in excess of a given size are returned in a central conduit preferably surrounding the duct.

3,765,613

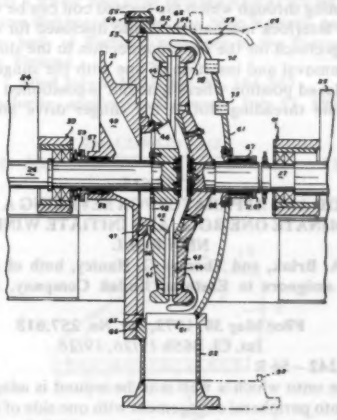
PULP REFINING SYSTEM AND APPARATUS

Herman W. Steiniger, Springfield, Ohio, assignor to The Bauer Bros. Co., Springfield, Ohio

Continuation of Ser. No. 495,782, Oct. 14, 1965, abandoned. This application Sept. 23, 1971, Ser. No. 182,945

Int. Cl. B02c 7/02

U.S. Cl. 241—251 **23 Claims**



A pressurized refining system characterized in a preferred embodiment by a refiner case consisting in the main of two mating parts forming a shell-like housing enclosing a pair of

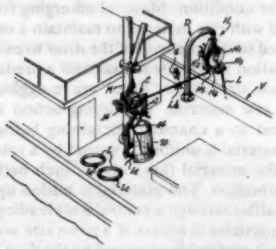
discs both of which are rotatable, one relative to the other, one of said case parts being simply retractable relative to the other and there being means sealing the shell at the joint defined by the interengagement of the parts in the relatively closed position thereof. The refiner features an environment for and a relationship of the refining discs enabling an improved method of refining fibrous materials particularly under a pressurized condition wherein cutting and abrading is minimized and the fibers are distinctly separated individually and in bundle form so as to preclude unnecessary damage and reduction in their quality and length.

3,765,614

LINE HAULING AND COILING APPARATUS

Ronald W. Bartl, Bellevue, Wash., and George G. Fulton, Vancouver, British Columbia, Canada, assignors to Marine Construction & Design Co., Seattle, Wash.

Filed Feb. 2, 1971, Ser. No. 111,977
Int. Cl. B21c *47/14*; B65h *54/00*; B66d *1/38*
U.S. Cl. 242—47 **9 Claims**



A crab trap warp line can be both hauled and coiled by the disclosed apparatus including coiling mechanism operated conjunctively with hauling mechanism through a common hydraulic drive system tending to operate the coiler somewhat faster than the hauler so as to help the latter with knots. A presser wheel wedging line into the V-shaped groove of the coiler's power driven sheave bends the line downward to pass through a tapered chute into a rotative slinger tube of elbowed configuration with a threading slot. As the slinger rotates with the drive sheave, the line pulled from the hauler descends in a helical configuration into a frustoconical receptacle having a side opening through which the formed coil can be withdrawn directly. Interlock mechanism is also disclosed for the slinger and a slip clutch for the drive connection to the slinger safely permit removal and insertion of line with the slinger stopped in an indexed position wherein its slot is positioned in registry with a line threading slot in the slinger drive and support means.

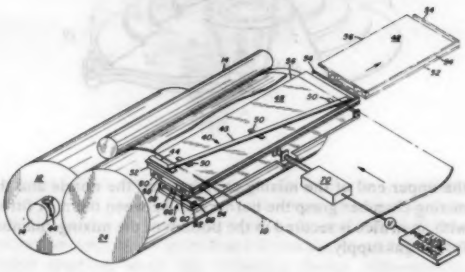
3,765,615

METHOD AND APPARATUS FOR SEVERING A WEB TO TERMINATE ONE ROLL AND INITIATE WINDING A NEW ROLL

Walter A. Brink, and Thomas G. Hanley, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1972, Ser. No. 257,613
Int. Cl. B65h *19/26, 19/28*
U.S. Cl. 242—56 R **20 Claims**

A core onto which a web is to be wound is adapted to be moved into peripheral engagement with one side of a web support such as a winding drum or roll over which the web passes. A cutting strip of polymethylene terephthalate is positioned between spaced portions of the web and roll, and has a central portion in register with the web and inclined at an angle to the nip of the core and roll. A tape having an adhesive surface on both sides is placed on the surface of the central portion of the strip facing the web. The strip has leading and trailing end portions extending beyond respective adjacent edges of the web, and an adhesive tab portion secured to the leading end portion. When the speed of the core substantially matches the speed of the roll, the strip is fed beneath the web directly into



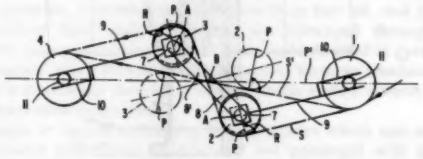
the nip formed by the rotating roll and core. The adhesive tab portion of the strip adheres to the core end extending past the adjacent edge of the web causing the central portion of the strip, as it passes through the nip, to adhere to the web and sever it. The central portion and leading end of the severed web are wound onto the core along with the tab portion.

3,765,616

STRIP SPACING APPARATUS

Armin S. P. Hutzenlaub, Gassenhagen, and Paul-Gerhard Durhager, Numbrecht, both of Germany, assignors to Inta-Roto, Inc., Richmond, Va.

Filed Feb. 18, 1971, Ser. No. 116,543
Claims priority, application Germany, Feb. 19, 1970, P 20 07 569.8
Int. Cl. B65h *35/02*
U.S. Cl. 242—56.5 **10 Claims**



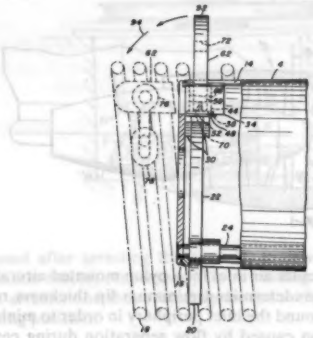
The apparatus laterally spaces a plurality of strips which have been slit from a relatively wide web to enable individual rewinding of the strips in spaced rolls to prevent interleaving of the convolutions of the strips in the rewind rolls. It comprises lead-in and lead-out rollers with a pair of guides disposed between said rollers, said guides being arcuate transversely of the plurality of strips. The arcuate guides serve to twist the strips from coplanar relatonship to deviate their paths from each other and then twist them back into coplanar but spaced relationship. The guides are angularly adjustable to arrange the arcs in predetermined relationship with respect to each other and to the lead-in and lead-out rollers respectively, and also are supported by pivotally mounted arms or frames to adjust the degree of arc to which the strips are subject.

3,765,617

ARTICULATED PULLER ARM

Arvine E. Laughlin, Waukegan, Ill., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 5, 1972, Ser. No. 241,264
Int. Cl. B21c *47/24*
U.S. Cl. 242—79 5 Claims



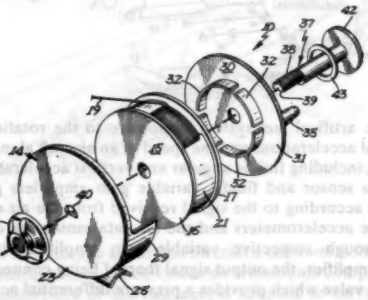
A puller arm for a wire drawing bull block which travels in a longitudinal slot in the block surface has a drawing position projecting outwardly from the surface of the block. After a bundle of wire is drawn, the arm is manually pushed to the end of the slot, rotated 90° and pivoted below the surface of the block to facilitate stripping.

3,765,618

CANE POLE REEL

Paul C. Johnson; Larry L. Lilland, and Earl E. Siemon, all of Spirit Lake, Iowa, assignors to Berkley & Company, Inc., Spirit Lake, Iowa

Filed Aug. 10, 1971, Ser. No. 170,584
Int. Cl. A01k *89/02*
U.S. Cl. 242—84.1 R 8 Claims



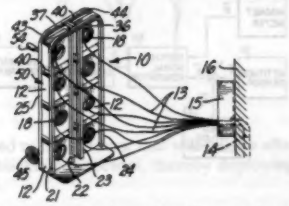
Reel means for fishing line including frame means for releasably retaining a line receiving spool, and being adapted to permit rotation of a line receiving spool retained therein. The frame includes foot means for securing the reel to the gripping handle of the fishing pole and is provided with a generally disc-shaped plate disposed along one side of the frame for engaging at least a portion of one lateral flange of the line receiving spool. A line spool engaging plate is arranged in opposed relationship to the disc-shaped plate, and is provided with a surface for engaging a radially extending rib formed in the core of the spool, with the line spool engaging plate rotating means with the spool. Eccentrically arranged handle means are coupled to the line spool engaging plate for rotation of the line spool within the frame, and a shaft is provided for engaging and supporting the central core of the line receiving spool and for accommodating rotation of the spool within the frame. The mounting shaft means is secured to the disc-shaped plate, and mounted against rotation within the frame, and has an enlarged head at one end for engaging the outer surface of the line spool engaging plate, with means preferably being provided for reducing the coefficient of friction between the head of the mounting shaft and the line spool engaging plate.

3,765,619

CARRYING AND DISPENSING DEVICE FOR BOX-CONTAINED WIRE

Robert H. Stillman, 10316 Pico Vista Rd., Downey, Calif.

Filed July 29, 1971, Ser. No. 167,222
Int. Cl. B65h *49/00*; D01h *7/16*; B62b *1/00*
U.S. Cl. 242—129.5 1 Claim



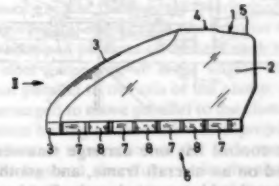
A carrier cart for mounting a plurality of containers of coiled wire, each container having an aperture in one face for withdrawal of the wire therefrom, the containers being mounted in individual compartments of the carrier, each compartment having a window to corespond with the container aperture when the container is retained in the compartments, all of the compartments being disposed in horizontal and/or vertical position with respect to each other and open on their sides to receive individual containers. With this construction, and with the carrier upright, the apertures of the containers all face the workman and are accessible through the windows in the carrier whereby any combination of wires may be conveniently and simultaneously withdrawn from the retained containers for introduction into conduits or the like.

3,765,620

FIN ASSEMBLY FOR FIN-STABILIZED PROJECTILES, AND A PROCESS FOR ITS MANUFACTURE

Frederic Arno Donner, Helsinki, and Niilo Kalervo Asikainen, Tampere, both of Finland, assignors to Oy Tampella Ab, Tampere, Finland

Filed July 9, 1971, Ser. No. 161,367
Claims priority, application Germany, July 11, 1970, P 20 34 568.0
Int. Cl. F42b *13/22*
U.S. Cl. 244—3.23 11 Claims



A fin assembly for use with fin-stabilized projectiles such as grenades and mortars includes a tail carrier tube with a plurality of longitudinally extending fins projecting radially from

the tube, the base or foot portion of each fin being pressfitted into the material of the tail carrier tube. The fins are composed of a material having substantially greater strength than the material of the tail carrier tube, and the foot portion of each fin preferably has an undulated configuration with respect to the longidutinal axis of the fin.

3,765,621

SYSTEM OF CONTROLLING THE ATTITUDE OF A SPINNING SATELLITE IN EARTH ORBITS

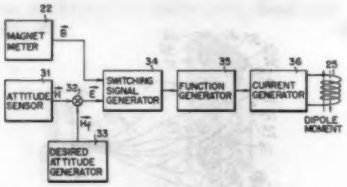
Masamichi Shigehara, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 26, 1971, Ser. No. 164,864

Claims priority, application Japan, July 29, 1970, 45/65689

Int. Cl. B64g 1/10

U.S. Cl. 244—1 SA **5 Claims**



A system of controlling the attitude of a spinning satellite by controlling a satellite-borne magnetic control element according to a switching function S defined by

$$S = \vec{E} \cdot (\vec{k}_s \times \vec{B})$$

where $\vec{E} = \vec{H} - \vec{H}f$

($\vec{H}$; instantaneous attitude of a spinning satellite; $\vec{H}f$; desired attitude of the spinning satellite)

$\vec{k}_s$; spin axis of the spinning satellite

$\vec{B}$; earth's magnetic field at the instantaneous position of the spinning satellite

wherein said magnetic control element is controlled by a pattern weighted near the middle between the two adjoining switching points of the switching function S.

3,765,622

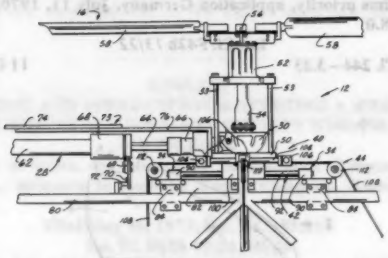
AIRCRAFT CONTROL MEANS

Robert M. Haines, R.R. 7, Maize, Kans.

Filed Jan. 17, 1972, Ser. No. 218,414

Int. Cl. B64c 27/04

U.S. Cl. 244—17.11 **3 Claims**



A rotorcraft control has one carriage transversely translatably mounted on an aircraft frame, and another carriage longitudinally translatably mounted on the first carriage with a rotor blade drive apparatus mounted on the second carriage. Apparatus is provided to move the carriages independently and simultaneously so as to control the position of the blade rotating apparatus on the airframe.

3,765,623

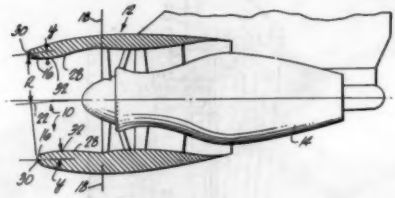
AIR INLET

John E. Donelson, Huntington Beach, and William M. Douglas, Palos Verdes, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Oct. 4, 1971, Ser. No. 186,049

Int. Cl. B64d 33/02

U.S. Cl. 244—53 B **10 Claims**



A generally circular air inlet for a pylon mounted aircraft jet engine wherein predetermined minimum lip thickness ratios are distributed around the inlet periphery in order to minimize the flow distortion caused by flow separation during certain design operating conditions.

3,765,624

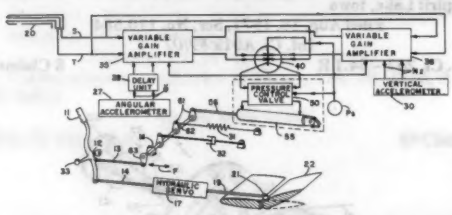
FLUIDICALLY AUGMENTED VARIABLE GAIN ARTIFICIAL FEEL SYSTEM

Walter W. Kaniuka, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 29, 1971, Ser. No. 184,734

Int. Cl. B64c 13/36

U.S. Cl. 244—83 R **10 Claims**



A fluidic artifical feel system responsive to the rotational and vertical accelerations and the speed of an aircraft along its flight path, including fluidic angular and vertical accelerators, an air data sensor and fluidic variable gain amplifiers gain modulated according to the signal received from the air data sensor. The accelerometers and the air data sensor are connected through respective variable gain amplifiers to a summing amplifier, the output signal thereof being connected to a fluidic valve which provides a pressure differential across a piston connected to the control stick of the aircraft.

3,765,625

METHOD AND APPARATUS FOR RESTORING THE RETRACTIBLE BARRIER OF AN AIRCRAFT ARRESTER

Lars Halvar Myhr, and Lars-Ake Erling Svensson, both of Norrkoping, Sweden, assignors to Borgs Fabriks AB, Norrkoping, Sweden

Filed June 7, 1971, Ser. No. 150,370

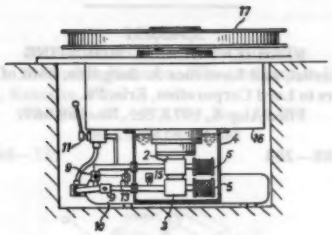
Claims priority, application Sweden, Aug. 28, 1970, 7011702

Int. Cl. B64f 1/02

U.S. Cl. 244—110 C **2 Claims**

A method and apparatus for retracting the retractible barrier of an aircraft arrester after it has arrested an aircraft and in

which a portion of the kinetic energy of the arrested aircraft is stored by means of hydraulic pumps and by hydraulic accumulators or by air compressors and compressed air accumulators



and used after arresting the aircraft, to drive hydraulic and pneumatic motors respectively for rewinding the band or line of the arrester and thus restoring the retractible barrier to the arresting position.

3,765,626

AIRCRAFT

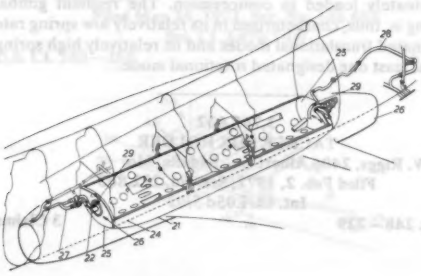
Harry Maynard, Brough, East Yorkshire, and Roy Desmond Boot, Hull, Yorkshire, both of England, assignors to Hawker Siddeley Aviation Limited, Surrey, England

Filed Oct. 6, 1971, Ser. No. 187,083

Claims priority, application Great Britain, Oct. 6, 1970, 47,499/70

Int. Cl. B64d *37/04*

U.S. Cl. 244—129 D **8 Claims**



For fuel storage aboard an aircraft a turnover door mounted on central pivots, which closes an armaments compartment in the underbelly of the fuselage, is adapted to serve as a fuel tank. Rotary fluid transfer couplings provided at the ends of the tank concentric with the pivots enable fuel to be transferred between the door tank and the main fuel system and also allow venting of the tank.

3,765,627

HARNESS AND AUXILIARY PARACHUTE RELEASE SYSTEM

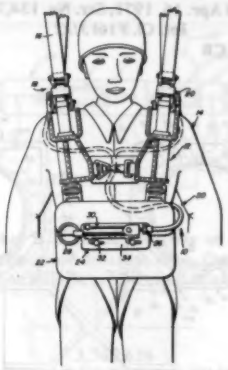
Stephen L. Snyder, 311 Cherry Hill Blvd., Cherry Hill, N.J.

Filed Apr. 28, 1972, Ser. No. 248,563

Int. Cl. B64d *17/38*

U.S. Cl. 244—147 **12 Claims**

A main parachute canopy is released from the harness by simultaneous disconnection of a pair of buckle connectors upon actuation of a remote control mechanism including a push-pull cable assembly anchored to a mounting plate. The mounting plate forms part of a releasable lock device, carried



on a pack secured to the harness, that will release after disconnection of the buckle connectors, thereby deploying an auxiliary parachute.

3,765,628

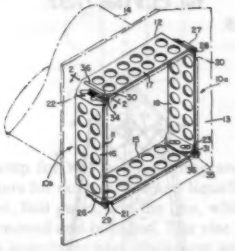
INSTRUMENT MOUNTING CLAMP

Harold K. Wilson, 3524 Bagley Ave., North, Seattle, Wash.

Filed Jan. 19, 1972, Ser. No. 218,905

Int. Cl. F16m *13/00*

U.S. Cl. 248—27 **7 Claims**



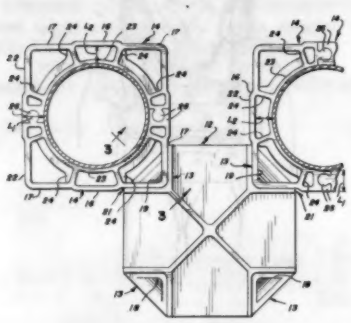
Instruments, such as aircraft instruments, are mounted upon a mounting panel using clamping devices which have two generally L-shaped clamping pieces surrounding an instrument, each of the clamping pieces having two legs forming respective dihedral angles at the junctures of the legs. The free end portions of each of the legs are overlapped and arranged such that the dihedral angles face one another in spaced relation. The overlapped portions of the legs each have elongated registering slots extending at cross angles to one another which are not parallel to the axis of the clamp. A pair of slide means are arranged to move parallel to the clamp axis, each of the slide means having connectors which project through the registering slots so movement of the slide means varies the overlap of the legs and, therefore, varies the size of the clamping area. Anchoring means are provided for connecting the clamping pieces to a mounting panel and adjusting screw means are connected to the slide means for selectively moving the slide means endwise to vary the clamping area and constrict the clamping pieces about the instrument.

3,765,629

CONDUIT SUPPORT AND SPACER MEANS

James E. Voelker, Bay Village, and James R. Cisar, Guyahoga Falls, both of Ohio, assignors to Standard Oil Company, Chicago, Ill.

Filed Apr. 16, 1971, Ser. No. 134,724
Int. Cl. F16l *3/22*
U.S. Cl. 248—68 CB 4 Claims



A conduit support and spacer means comprised in combination of: at least two separators; at least two connection members operably attached and spaced on each separator; and at least one bridge comprising: conduit conforming support means; and at least two connection members attached to said conduit conforming support means each capable of mating with an aforesaid connection member of said separator to form a connection.

3,765,630

PORTABLE LOAD SUPPORTING APPARATUS

Hoyt B. Woolley, 234 Fieldstream Ln., Idaho Falls, Idaho

Filed Dec. 16, 1971, Ser. No. 208,805
Int. Cl. F16m *11/32*
U.S. Cl. 248—165 7 Claims

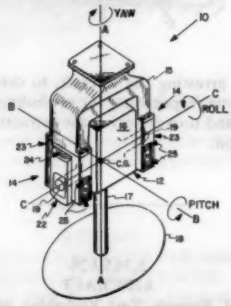
A portable collapsible load supporting apparatus that may be used to lift and hold in place heavy objects and may have particular use to support wild game for field dressing. The apparatus includes a vertical shaft from which the load may be supported and radially extending rods pivotally connected to one end and a plurality of arms pivotally connected to the other end of the shaft and extending downwardly and outwardly to be received and supported within a socket means. Each free end of each arm and each rod are received in the head end of the socket means while the tail end is vertically aligned with a telescopic supporting leg and angularly disposed from the centerline of the head end. The pivotally connected arms and rods may be folded back against the shaft for ease of transportation.

3,765,631

RESILIENT GIMBAL MOUNTING

Paul T. Herbst, and Lawrence A. Bergman, both of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed Aug. 6, 1971, Ser. No. 169,669
Int. Cl. F16m *13/00*
U.S. Cl. 248—204 9 Claims



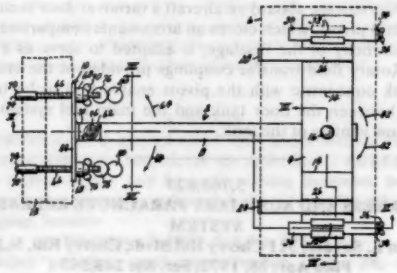
A plurality of three nested gimbal frames are provided with the intermediate frame supporting the inner frame for relative translational movement along a first axis and the outer frame supporting the intermediate frame for relative translational movement along a second axis at a right angle to the first axis. Elastomeric means resiliently mount the frames and accommodate the relative translational movements predominately in shear while being resistant to relative rotational movement in a plane parallel to the first and second axis by being predominately loaded in compression. The resilient gimbal mounting is, thus, characterized in its relatively low spring rate in designated translational modes and its relatively high spring rate in at least one designated rotational mode.

3,765,632

TACKLE BOX HOLDER

Royal W. Riggs, 2406 Albert Ln., Sedalia, Mo.

Filed Feb. 2, 1972, Ser. No. 222,803
Int. Cl. E05d *5/02*
U.S. Cl. 248—229 3 Claims



A tackle box holder including a platform having a tackle box mount carried thereby adjustable to receive and grip tackle boxes of various sizes, the platform being connected by

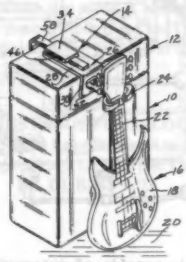
a vertical pivot to the free end of a horizontal arm, a bracket connected by a vertical pivot to the opposite end of the arm and being specially adapted to mount said arm on the gunwale of a boat or the like, and to level the arm, and adjustable friction devices yieldably resisting pivoting of the platform relative to the arm, and of the arm relative to the bracket.

3,765,633

MUSICAL INSTRUMENT STAND

Clarence D. J. Caudill, Kenosha, Wis., assignor to Darrell L. Littiken, Kenosha, Wis.

Filed June 17, 1971, Ser. No. 154,053
Int. Cl. F16m *13/02*
U.S. Cl. 248—229 11 Claims



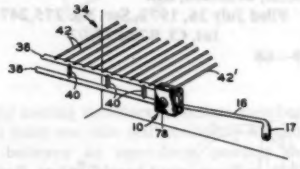
A somewhat claw-like instrument receiver is provided for receiving the neck of a guitar, the upper portion of a wind instrument, etc. The instrument receiving device is mounted on a clamp mechanism that will clamp across the top of a stable base or support, such as a guitar amplifier or loudspeaker equipment.

3,765,634

JOINER SUPPORT

Edward H. Stempel, Pompano Beach, Fla., assignor to Belaco, Inc., Ocala, Fla.

Filed May 25, 1971, Ser. No. 146,652
Int. Cl. A47b *3/00*
U.S. Cl. 248—250 6 Claims



A joiner support for joining together open shelves by fastening together two shell halves about rods of the shelves, the rods extending through openings in the shell halves and being braced within the shell halves to help stabilize the shelves. The joiner support can be braced against a wall with a bracket.

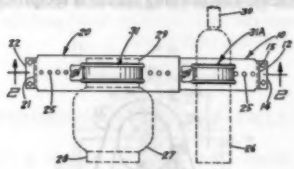
3,765,635

BRACKET FOR GAS CONTAINERS AND SIMILAR TANKS

Wayne R. Burrell, Golden Valley, and Richard P. Burrell, Stillwater, both of Minn., assignors to Burrell Bros., Inc., Coon Rapids, Minn.

Continuation-in-part of Ser. No. 200,294, Nov. 19, 1971. This application Mar. 24, 1972, Ser. No. 237,697
Int. Cl. A47f *5/00*
U.S. Cl. 248—313 6 Claims

A bracket for rigidly supporting and mounting tanks, such as containers for compressed and liquefied gases such as refrigerant gases, fuel gases, and the like. The bracket is of simple sturdy construction permitting easy placement and removal of the gas container in the bracket. At the same time, the gas container is held securely so as to avoid vibration and



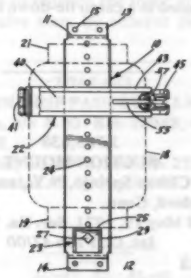
noise. The bracket is made in a variety of sizes to accommodate gas containers of different sizes. One or more tanks may be mounted on a single support spaced either horizontally or vertically.

3,765,636

VISE FOR GAS CONTAINERS AND SIMILAR TANKS

Wayne R. Burrell, Golden Valley, and Richard P. Burrell, Stillwater, both of Minn., assignors to Burrell Bros., Inc., Coon Rapids, Minn.

Continuation-in-part of Ser. No. 200,294, Nov. 19, 1971. This application Apr. 5, 1972, Ser. No. 241,357
Int. Cl. A62c *3/00*
U.S. Cl. 248—313 6 Claims



A vise or clamp for rigidly supporting and holding tanks, such as containers for compressed and liquefied gases such as refrigerant gases, fuel gases, and the like, while their valve assemblies are removed and installed. The vise is of simple sturdy construction permitting easy placement and removal of the gas container. At the same time, the gas container is held securely against rotation to permit relative rotation of the valve assembly. The vise is made in a variety of sizes to accommodate gas containers of different sizes. The vise may be used either horizontally or vertically.

3,765,637

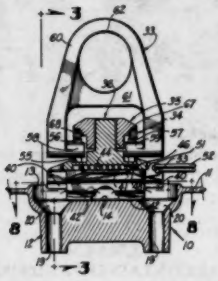
QUICK DISCONNECT SEAT TRACK CARGO TIE DOWN

Max W. Watts, Tiger, Ga., assignor to Aid Corporation, Clayton, Ga.

Filed Apr. 16, 1971, Ser. No. 134,706
Int. Cl. B65j *1/22*
U.S. Cl. 248—361 A 6 Claims

A quick connectable and disconnectable cargo tie-down apparatus including one attachment member having a socket means with a number of entrance openings and another attachment means having a number of alignment projections with laterally movable latching means. The socket means of the one attachment member includes an elongated, recessed socket having laterally extending projections extending into

the sockets for defining the number of entrance openings and providing a number of fixed lateral latching surfaces. The projections of the other attachment member are complementary in radial dimensions to the entrance openings of the socket with the latching means having a number of movable lateral latching surfaces for latching engagement with the fixed latching surfaces. The latching means is reciprocally operable



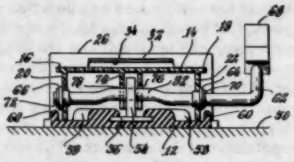
between a projection aligned connecting and disconnecting position and a displaced latch retaining position with spring biasing means for normally urging the latching means to the displaced latch retaining position. The attachment member having the latching means includes a rotatably and pivotally mounted clevis connecting element supported thereon with the clevis element including a formed opening for receiving tie-down means used in a cargo tie-down operation.

3,765,638

SUCTION MOUNT

Larry Harrison, Clifton Springs, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 19, 1971, Ser. No. 144,934
Int. Cl. F16b *47/00*
U.S. Cl. 248—363 **4 Claims**



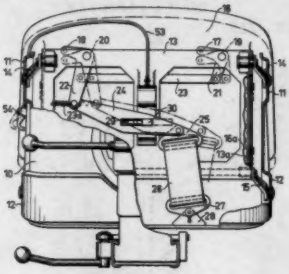
A suction mounting means is provided having a housing adapted for effectively providing a three point suspension of a utility device which is supported thereon. The housing includes a mounting surface having extending shoulders which engage channels on a base member of the utility device and an upstanding window which engages a tab member on the base of the utility device. The housing is mechanically coupled to a flexible holding member and means are provided for deforming the member in order to establish vacuum holding forces between the deformable member and a surface upon which it is positioned. With this arrangement, the forces which are applied to the mount are distributed in a relatively uniform manner and the holding characteristics of the vacuum mount are enhanced.

3,765,639

VEHICLE CHAIR HAVING A RESILIENTLY SUPPORTED SEAT

Karl Gosta Mystrom, Skeppargatan 13, Unea, Sweden

Continuation of Ser. No. 767,990, Oct. 16, 1968, abandoned. This application Nov. 9, 1970, Ser. No. 88,116
Claims priority, application Sweden, Oct. 17, 1967, 14216/67; Aug. 23, 1968, 11396/68
Int. Cl. A47c *3/22*
U.S. Cl. 248—399 **5 Claims**



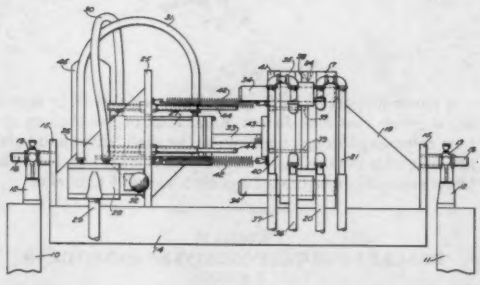
A vehicle chair capable of automatic adjustment in accordance with occupant weight. The chair is supported by spring means acting through a lever. To adjust the chair for different occupant weight the lever is respositioned automatically by first releasing the normal coupling between seat, lever, and spring; and second, the lever is positioned in accordance with occupant weight. Then the coupling between seat, lever, and spring is reestablished for normal operation. In one embodiment the lever is moved relative to its pivot to adjust for weight variations. In another embodiment the application of force to the lever from the seat is shifted for purposes of compensation.

3,765,640

SEMI-AUTOMATIC DYNAMICALLY BALANCED GRAVITY CASTING MACHINE

Louis Saccoccio, Cranston, R.I.

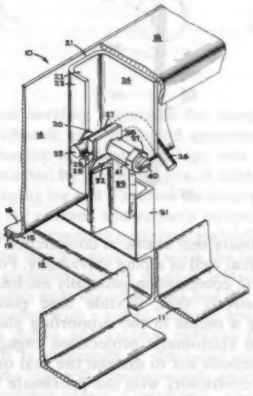
Filed July 26, 1972, Ser. No. 275,247
Int. Cl. B22d *33/02*
U.S. Cl. 249—68 **4 Claims**



The machine is designed to handle brass molds of the type heretofore operated by hand. A flat rectangular base is provided with end walls which are pivotally mounted so that the machine is dynamically balanced to easily pivot the machine with little effort. A pair of rectangular plates are mounted on edge with opposed faces. One plate is fixed and the other plate is movable. One half of a mold is mounted on each plate face.

The plates are water cooled to cool the mold elements mounted thereon. A pneumatic cylinder is provided with a piston rod which operates the movable plate. The cylinder is controlled by a manually operable valve toward the front of the base. By moving the valve handle, the operator can move the movable plate toward the fixed plate to close the mold. Movement in the opposite direction will open the mold. In closed position, the operator ladles molten metal into the mold gate at the top to fill the mold and gate. The control handle is grasped and the operator lifts the handle causing the entire machine to pivot and tilt 90°. This dumps the excess molten metal from the mold gate. The machine is pivoted back to horizontal and the mold is opened. An auxilary plate is slidable mounted behind the movable plate and carries a plurality of knockout pins which are designed to enter openings in the movable plate and mold. The pin plate is held in withdrawn position by springs when the mold is closed. However, when the mold is opened, the movable plate backs into the pin plate to cause the pins to dislodge the molded article from the mold.

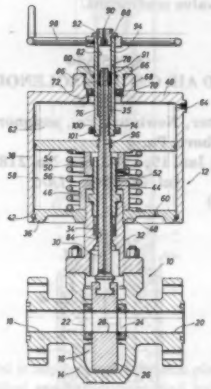
3,765,641
ADJUSTABLE FORM LOCK
Lawrence F. Tumey, 5824 Lake Breeze Ave., Lakeland, Fla.
Filed Sept. 29, 1971, Ser. No. 184,733
Int. Cl. B28b *7/02*
U.S. Cl. 249—161 **7 Claims**



A form for casting structural concrete members has a bottom with at least one side wall resiliently hinged thereto for movement between an open-form position that provides stripping draft and a closed-form position defining a corresponding portion of a member to be cast. Means are provided for pivoting the side wall about the bottom and locking the side wall in a closed-form position. Adjusting means acting upon the side wall pivoting and locking means enable the position of the side wall to be adjusted when locked in the closed-form position.

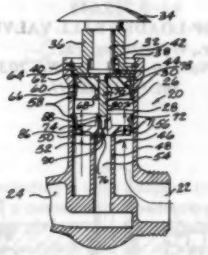
3,765,642
VALVE AND ACTUATOR ASSEMBLY
Norman A. Nelson, Houston, Tex., assignor to Texas Iron Works, Inc., Houston, Tex.
Filed Sept. 29, 1971, Ser. No. 184,837
Int. Cl. F16k *3/02, 31/143*
U.S. Cl. 251—14 **32 Claims**

A valve and actuator assembly having a mechanism adapting such assembly for remote actuation by a pressure medium such as hydraulic or pneumatic fluid and including means for controlling the development of resultant forces acting upon the valve stem of the valve. The valve and actuator assembly includes safety means for rendering the valve safe in response to the development of predetermined unsafe conditions and is adapted with a manual override system allowing the valve to be manually opened or closed regardless of the condition of the safety means. Mechanical or fluid actuated interlock means is provided to render fluid actuating means inoperative and is also provided with means for rendering the mechanical



override inoperative. The assembly is adapted to lock out the fluid actuator system to allow the assembly to be serviced without risk of inadvertent actuation by automatic systems. Effluent pressure may be communicated to the outer extremity of the valve stem to balance the force applied to the inner extremity of the valve stem by effluent pressure within the valve.

3,765,643
NON-DRIP FAUCET VALVE
Jesus De La Garza, c/o P. O. Box 18948, Cimerron Station, Los Angeles, Calif.
Filed July 17, 1972, Ser. No. 272,689
Int. Cl. F16k *31/44*
U.S. Cl. 251—38 **12 Claims**



A non-drip faucet valve comprising a hollow valve housing provided with an interior fluid-pressure-expandable valve means connected between a valve seat means and a valve-actuating member and arranged to be in interior communication with pressurized water (or other liquid or fluid) whereby to automatically expand said fluid-pressure-expandable valve means in a space defined between said valve-actuating member and said valve seat means and to sealingly engage a sealing portion of said valve seat means in a manner preventing the outflow of water (or other liquid or fluid) past the sealingly engaged fluid expanded valve means and the sealing portion of said valve seat means whenever the valve-actuating member is within a predetermined distance of said valve seat means. The fluid-pressure-expandable valve means is arranged to effectively move into a non-expanded contracted relationship whenever said valve-actuating member is moved

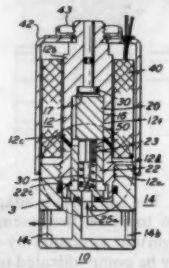
to a position more than a predetermined distance from said valve seat means whereby to disengage said valve means from the sealing portion of said valve seat means and to effectively temporarily override the self-expansion operation of said fluid-pressure-expandable valve means for as long as said valve-actuating member is beyond said predetermined distance from said valve seat means whereby to permit the outflow of water (or other liquid or fluid) past the disengaged valve means and valve seat means.

3,765,644

CONTROLLED AIR GAP IN A SOLENOID OPERATED VALVE

Kenneth W. Zeuner, Newtown, Pa., assignor to Control Concepts Inc., Richboro, Pa.

Filed Jan. 19, 1972, Ser. No. 218,875
Int. Cl. F16k 31/06
U.S. Cl. 251—129 **6 Claims**



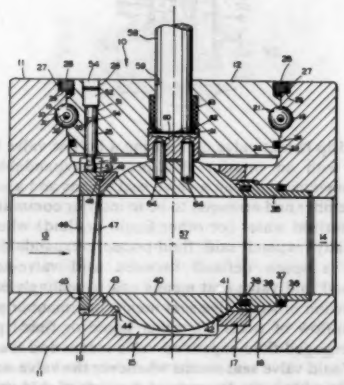
A single stage normally open solenoid operated poppet valve which has a control orifice and a poppet which moves between a valve open and a seated position. A pole piece adjacent the poppet is spaced from and forms an air gap with an armature which contacts the poppet. On application of electromagnetic flux line flow through the armature and pole piece, the air gap is decreased to a finite predetermined distance of value to provide sufficient attractive force to seat and maintain seated the poppet.

3,765,645

TOP-LOADED BALL VALVE

Herman L. Paul, Jr., Wyomissing, Pa.

Filed Nov. 30, 1971, Ser. No. 203,213
Int. Cl. F16k 5/14
U.S. Cl. 251—170 **6 Claims**



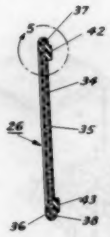
A ball valve including a housing consisting of a body and a bonnet. The body has a horizontal through passage and a vertical opening extending downwardly from its top and communicating with the passage intermediate its ends. The bonnet is right circular cylindrical and registers with the upper portion of the vertical opening. The bonnet is removably coupled to the body by a ball securing means which is positioned in aligned annular grooves in these parts. A ball plug is located in the housing and has a through passage which is adapted to be placed into and out of communication with the body passage. Also located in the housing are spaced first and second support rings which bear against corresponding end surfaces of the ball plug. The inner and outer end faces of the first support ring are planar and upwardly convergent. An adjusting ring is mounted against the outer surface of the first support ring and is vertically slidable therealong. The inner and outer face surfaces of the adjusting ring are planar and downwardly convergent. The bonnet carries a vertically movable rod which is coupled to the adjusting ring for varying its vertical position.

3,765,646

PLUG VALVE SEAL

William L. Hulslander; Gerald L. Anderson, and Charles J. Glover, all of Bradford, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 18, 1972, Ser. No. 227,475
Int. Cl. F16k 5/02
U.S. Cl. 251—183 **16 Claims**



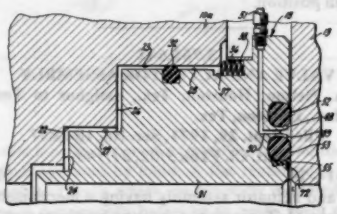
A floating closure seal usable in conjunction with a tapered plug in the conical well of a plug valve body. Forming the seal is an elastomeric composition generally enclosing an arcuate span of a relatively thin, flexible base material. On the backside facing a recess in the supporting plug, the seal includes localized elastomeric projections engaging the recess wall. The projections act to distend the seal on its front side into diametral conformity with the proximate body well surface for effecting a sealing relation therewith.

3,765,647

VALVE CONSTRUCTION AND METHOD

Marvin H. Grove, and Kee W. Kim, both of Houston, Tex., assignors to M & J Valve Company and M & J Development Company, Houston, Tex.

Continuation-in-part of Ser. No. 176,801, Sept. 1, 1971, abandoned. This application Jan. 21, 1972, Ser. No. 219,635
Int. Cl. F16k 5/00
U.S. Cl. 251—317 **6 Claims**



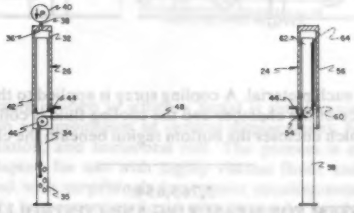
A valve (e.g., gate or ball) having a sealing assembly including a rigid annular seat member and annular sealing means

carried by the same. The resilient material of the sealing means is locked in place by lip portions that are bent or rolled over during manufacture. In a preferred embodiment the sealing means consists of a first assembly comprising a seal ring made of relatively hard resilient material (like nylon) an an annulus of more resilient material maintained in radial compression, together with another annular insert of resilient material which is concentric with the first assembly.

3,765,648
SUPPORT APPARATUS

Reed Rasmussen, 168 West Gentle, Layton, and Carl M. Rasmussen, 197 East 1400 South, Bountiful, both of Utah

Filed Sept. 7, 1971, Ser. No. 177,957
Int. Cl. B66f 7/26
U.S. Cl. 254—47 **9 Claims**



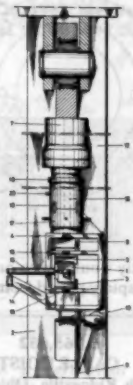
Elevating and leveling apparatus for campers and other transportable objects, one preferred apparatus embodiment including a plurality of telescoping legs, one of which is extended and retracted by power means. A cable is anchored to another telescoping leg and traverses stationary-axis pulleys so that the other leg extends and retracts concurrently with the one leg. In another presently preferred embodiment, a plurality of telescoping legs are mounted upon the transportable object and the extensible portion of each telescopic leg is provided with a pulley near the upper end and the fixed portion of each leg is provided with a pulley near the lower end. A cable traverses each pulley and extends between the legs so that when the cable is shortened or displaced out of its normal path, each of the legs will simultaneously extend to uniformly lift the transportable object. Conversely, when the length of the cable is increased or when the cable is allowed to resume its normal path, the legs will simultaneously retract. The method includes jointly extending or retracting telescoping legs by displacing a cable connecting the legs. Alternatively, the method includes power displacing one leg and causing simultaneous displacement of another leg through a connecting cable.

3,765,649
ARRANGEMENT FOR EFFECTING A RELATIVE LINEAIR DISPLACEMENT BETWEEN A PLURALITY OF LEGS AND A STRUCTURE ADAPTED TO BE MOVED ALONG SAID LEGS

Rene A. H. M. Raaymakers, Schiedam, Netherlands, assignor to N.V. Industriecle Handelscombinate Holland, Rotterdam, Netherlands

Filed Aug. 16, 1971, Ser. No. 172,042
Claims priority, application Netherlands, Aug. 18, 1970, 7012185
Int. Cl. B66f 7/16
U.S. Cl. 254—106 **4 Claims**

An offshore construction comprises a platform supported on and movable vertically relative to a plurality of legs. At least one of the legs has rack teeth vertically spaced therealong, and the platform supports a crosshead that has a horizontally reciprocable beam that enters between the rack teeth. The crosshead is yieldably urged against the leg carrying



the rack teeth and is suspended from the platform by a pair of hydraulic jacks that are interconnected by ball joints to the platform.

3,765,650
JACK CONSTRUCTION

Elroy C. Eisenhauer, 775 Tifft St., Buffalo, N.Y.

Filed Mar. 29, 1972, Ser. No. 239,217
Int. Cl. B66f 3/38
U.S. Cl. 254—133 **11 Claims**

A jack head including a stem adapted to be mounted on a jack, a head, and a connection for securing said head to said stem for combined pivotal and translational movement relative thereto so as to follow the arc of a body being lifted by said jack, said connection including spring means coupled between said head and said stem for biasing said head to a first position when said head is not supporting a load but permitting said head to move to a second position rotationally and translationally removed from said first position when said head supports said load.

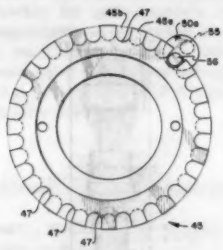
3,765,651
HOIST

Henry R. Lifferth, P.O. Box 57, Fortine, Mont.

Filed Aug. 2, 1971, Ser. No. 167,992
Int. Cl. B66d 1/00
U.S. Cl. 254—186 HC **4 Claims**

A portable, compact hoist constructed of lightweight metals and high strength fabrics. The invention has a maximum lifting capacity and a minimum size and weight. A self-locking gear

arrangement that can be overcome by momentum of an operating handle insures that a flat tape used for the hoist

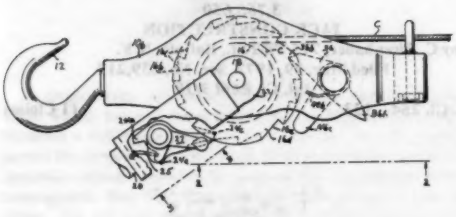


cable can be efficiently wound onto or off of the reel and that the tape can also be rapidly pulled from the real.

3,765,652
CABLE HOIST

Anton J. Janik, North Ridgeville, Ohio, assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 9, 1971, Ser. No. 132,735
Int. Cl. B66d *1/00*
U.S. Cl. 254—167 2 Claims



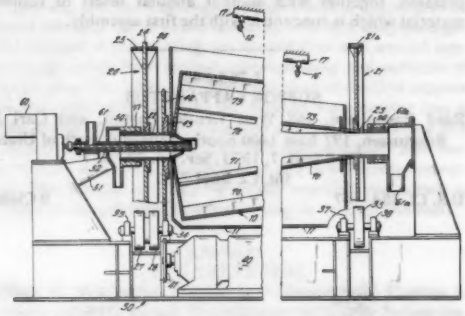
A cable hoist is provided which has a frame and a drum in the frame to which a cable is attached and a ratchet wheel secured to the drum. A handle mounted on the frame carries a ratchet pawl for engagement with the ratchet wheel. A holding pawl mounted in the frame cooperates with the ratchet pawl and wheel to enable the drum to be ratcheted and wind up the cable. A disc is disposed alongside the ratchet wheel and has notches in it which correspond to a lesser number of teeth than are on the ratchet wheel. The holding pawl can be moved laterally to cause it to extend over the disc as well as the ratchet wheel and the disc will hold the holding pawl out of engagement with some of the teeth of the ratchet wheel to allow the cable to unwind from the drum under control of the handle several teeth at a time.

3,765,653
REACTOR FOR PREPARING AN EASILY COMPACTABLE MATERIAL

Harold H. Morse, Cincinnati, Ohio; Layne F. Plock, Geneva, Ohio, and Fred Keith Morgan, Cold Springs, Ky., assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,104
Int. Cl. B01f *9/06*
U.S. Cl. 259—3 9 Claims

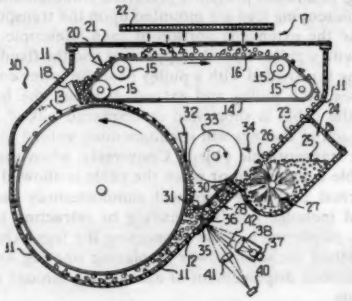
A conical chamber having its longitudinal axis disposed horizontally has input connections at the center of the larger diameter end of the cone shape. The smaller diameter end of the cone is truncated to define a discharge outlet. The cone is mounted for rotation, and the interior surface of the conical chamber contains lifting vanes of short height which extend longitudinally along the inner surface of the cone and act to mix or tumble material loaded into the chamber from the input connections without applying an undue compacting force to such material. A cooling spray is applied to the exterior surface of the chamber and the cooling fluid is collected by a pan which encloses the bottom region beneath the chamber.



3,765,654
SYSTEM FOR MEASURING AND CONTROLLING MIXTURE CONTENT

Kenneth W. Rarey, South Holland, and John B. Kennedy, Jr., Oak Forest, both of Ill., assignors to Continental Can Company Inc., New York, N.Y.

Division of Ser. No. 768,377, Oct. 17, 1968, Pat. No. 3,610,205. This application Aug. 6, 1971, Ser. No. 169,622
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 4 Claims



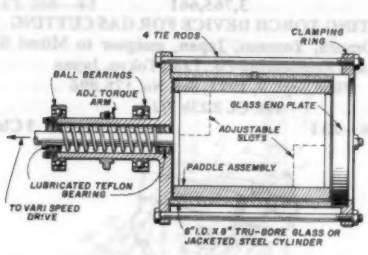
A method of detecting the ratio of component particles in a mixture wherein the quantity of one of the component particles is continually decreased, as in an electrostatic printing operation, includes the provision of a window adjacent the path of movement of the mix of component particles and contacting particles in transit therepast, illumination of the mix through the window and detection of light reflected from the mix through the window. Replenishment of the depleted component may be electrically controlled in accordance with the light reflected and optical filter provisions may be employed to limit the spectrum of the light with which the mix is illuminated where the components of the mix differ in color. Diversion of a quantity of mix to by-pass an area wherein depletion of one component occurs effects mixing in the direction of flow and cross-flow mixing effects greater consistency in the mix transverse to the direction of flow.

3,765,655

MIXING PROCESS

George A. Latinen, deceased, late of Springfield, Mass. (by May V. Latinen, administratrix), assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 16, 1971, Ser. No. 172,146
Int. Cl. B01f 7/04
U.S. Cl. 259—9 16 Claims



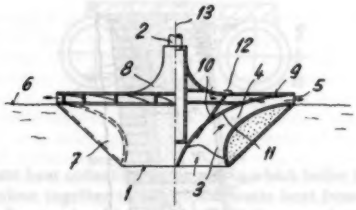
A mixing process in which a liquid is simultaneously subjected to a combination of vertical displacement, horizontal recirculation, and horizontal roll. The process is especially well adapted for use with highly viscous fluids and can be practiced with surprisingly low power requirements. A substantially homogeneous liquid system can be produced and maintained in a relatively short mixing time.

3,765,656

AERATING CIRCULATORS

Klais Tofaute, Ennetburgen, Switzerland, assignor to Norm A.M.C.A.J., Brioch, Switzerland

Filed Feb. 15, 1972, Ser. No. 226,448
Claims priority, application Switzerland, Feb. 15, 1971, 2186/71
Int. Cl. B01f 5/16
U.S. Cl. 259—96 5 Claims



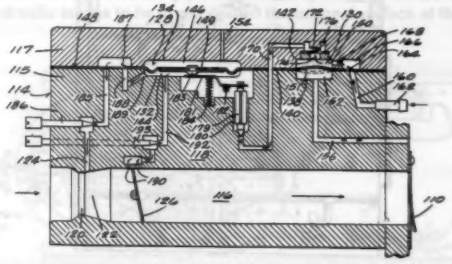
A method of and device for minimizing the formation of ice and/or the deposition of dirt on an exposed upper surface of an aerating circulator. The circulator has a portion thereof disposed beneath the surface to be aerated and another portion, including an exposed upper surface, which extends above the surface of the liquid. A rotor of the circulator is rotated to deliver the fluid by centrifugal force through radially extending supply ducts. The ducts are curved continuously from a submerged, substantially vertically disposed inlet to a substantially horizontally disposed outlet substantially at the surface of the liquid to be aerated. The method comprises diverting a portion of the liquid in the ducts by means of branch conduits and delivering the diverted liquid to the topside of the exposed upper surface.

3,765,657

DIAPHRAGM CARBURETOR

Chester Du Bois, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Oct. 25, 1968, Ser. No. 770,645
Int. Cl. B01d 47/00
U.S. Cl. 261—37 5 Claims



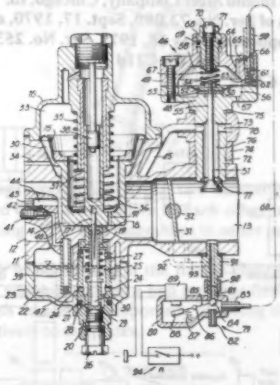
Disclosed herein is a carburetor which includes two diaphragm chambers within the carburetor housing. One diaphragm chamber forms part of a pulse actuated fuel pump and the other diaphragm chamber is the main fuel metering diaphragm chamber. Both the fuel pump and the main diaphragm chamber are formed from opposed recesses in mating surfaces of a housing cover and a housing surface. The opposed recesses forming each diaphragm chamber are separated by a common diaphragm which extends between the mating surfaces of the cover and housing. The fuel pump is operated by pressure variations in the crankcase which communicate with the fuel pump through a passage in the carburetor housing.

3,765,658

CARBURETOR FOR AUTOMOTIVE VEHICLES

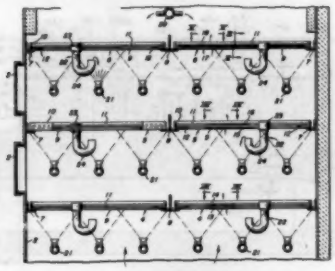
Gunter Hartel, Rosellen, and Dietmar Walter, Zons, both of Germany, assignors to Deutsche Vergaser Gesellschaft m.b.H & Co. K. G., Neuss, Germany

Filed Oct. 22, 1971, Ser. No. 191,625
Claims priority, application Germany, Oct. 24, 1970, G 70 39 342.9
Int. Cl. F02m 9/06
U.S. Cl. 261—41 D 6 Claims



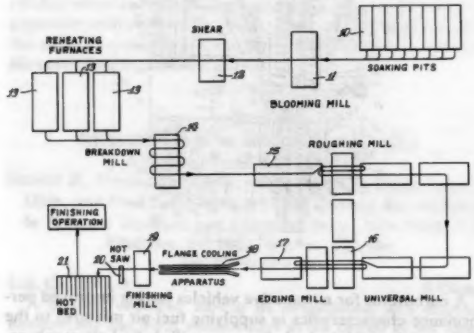
A carburetor for automotive vehicles having improved performance characteristics in supplying fuel-air mixtures to the engine of the vehicle, including an auxiliary fuel-air supply arrangement and regulating valve which is responsive to instantaneously varying operating conditions of the engine to supply correspondingly adjusted quantities of fuel-air mixture thereto.

3,765,659
GAS SCRUBBER
Bertram B. Reilly, 17 Briar Cliff, Pittsburgh, Pa.
Filed Jan. 17, 1972, Ser. No. 218,250
Int. Cl. B01f 3/04
U.S. Cl. 261—109 3 Claims



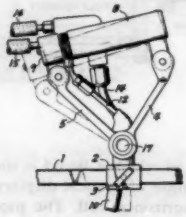
A gas cleaning apparatus for removing particulate matter from gases which is of the type having a vertical passage through which the gases flow upwardly with water-containing trays across the passage at spaced levels, has each tray formed with a perforate bottom and an impingement plate spaced a short distance above the bottom, the tray bottom and impingement plate each having holes therethrough through which the gases pass. The holes in the impingement plate are slightly larger than those in the bottom and so staggered that the holes of the bottom are under solid areas of the impingement plate. There are spray nozzles under the trays at each level for cleaning them. The holes through the bottom and the impingement plates of each tray are of progressively smaller area than the corresponding holes in the trays beneath, but the number of holes in the corresponding parts of each tray increases upwardly above the bottom one so that the total area of the openings through the elements of the trays at each level is substantially the same.

3,765,660
BEAM QUENCHING APPARATUS AND METHOD
Harold L. Taylor, Hebron, Ind.; John M. Marshall, South Holland, Ill., and Timothy A. Veslocki, Hessville, Ind., assignors to Inland Steel Company, Chicago, Ill.
Continuation of Ser. No. 73,088, Sept. 17, 1970, abandoned.
This application May 15, 1972, Ser. No. 253,464
Int. Cl. C21d 1/62
U.S. Cl. 266—6 R 8 Claims



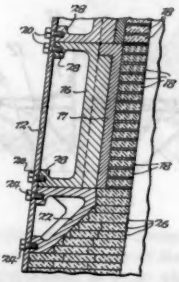
A method of selectively cooling the wide flanges of a beam and apparatus for selectively cooling wide flange beams in which a wide flange beam is moved longitudinally between spaced channel forming members adjustably disposed in close proximity to the outer lateral surfaces of the wide flanges of the beam to form a narrow cooling channel extending substantially the width of the said flange and through which cooling water is passed to effect lowering the temperature of the flanges without allowing an appreciable amount of the cooling water to contact the web of the beam.

3,765,661
CUTTING TORCH DEVICE FOR GAS CUTTING
Yoshiaki Omura, Tamano, Japan, assignor to Mitsui Shipbuilding and Engineering Co., Ltd., Tokyo, Japan
Filed Sept. 9, 1971, Ser. No. 178,896
Int. Cl. B23k 7/10
U.S. Cl. 266—23 L 3 Claims



A cutting torch device for gas cutting used for cutting a steel plate having mechanism for cutting a starting hole through the steel plate, the starting-hole mechanism comprising a nozzle provided to move along the cutting direction, and means for pivotally moving the nozzle by pressure of cutting oxygen supplied to the nozzle.

3,765,662
REFRACTORY FACED BLAST FURNACE WEAR ELEMENT
John E. Wilson, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Jan. 3, 1972, Ser. No. 214,987
Int. Cl. F27b 1/10
U.S. Cl. 266—27 13 Claims



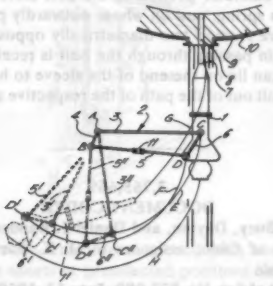
The invention pertains to a segmented wear element and supporting casting which is designed for installation within the stockline zone of a blast furnace, the wear element receiving the impact and abrasive wear of the furnace raw materials as they are dumped into the stockline zone. The wear element is a metal casting having a special abrasion resistant refractory cast into the wearing face. This wear element is arranged to engage with and be supported by a separate metal box casting which is fastened to the interior of the furnace shell. This supporting casting holds the refractory wear element in proper alignment with the refractory used in the lower linings of the furnace and avoids the use of other backing materials for the special refractory.

3,765,663

CLAY GUNS FOR BLAST FURNACES

Edouard Legille, and Pierre Mailliet, both of Luxembourg, assignors to S. A. Des Anciens Etablissements Paul Wurth, Luxembourg, Grand Duchy of Luxembourg

Filed Nov. 26, 1971, Ser. No. 202,170
Claims priority, application Luxembourg, Nov. 27, 1970, 62,151; June 3, 1971, 63,275
Int. Cl. C21b 7/12
U.S. Cl. 266—42 15 Claims



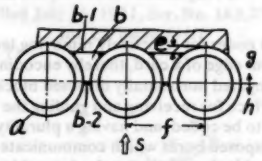
Improved devices for plugging blast furnaces tapholes, the devices including clay gun means for injecting plugging mud into the taphole, are disclosed. The plugging devices are each characterized by a clay gun which effectively forms one side of a parallalogram-type linking. Movements of the plugging devices are controlled by a hydraulic drive and the guns are moved between rest and work positions along a curved path in a plane inclined from the vertical.

3,765,664

CONSTRUCTION OF HEATING SURFACE OF WASTE HEAT BOILER FOR METAL REFINING FURNACE

Masaki Ojima, Akashi City; Ryouichi Otoyo, and Tomohiko Shiraishi, both of Kobe City, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 9, 1971, Ser. No. 169,910
Int. Cl. C21c 5/46
U.S. Cl. 266—43 1 Claim



A waste heat collecting water wall in which boiler tubes are placed close together to absorb the waste heat from a metal refining furnace in which filler rods fill the space between the adjacent tubes and provide a substantially flat wall on which dust collects and can easily be removed because there are no deep indentations in the wall surface in which the dust from the furnace can collect and the wall is sufficiently flexible so that collected dust can be removed by vibration and/or by rapidly moving air.

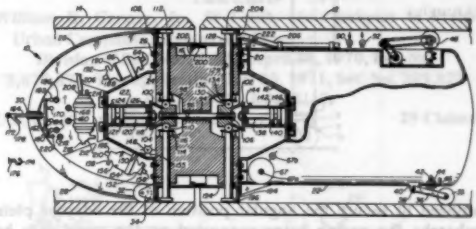
3,765,665

INTERNAL PIPE LINE-UP CLAMP

John S. Work, Tulsa, Okla., assignor to American Pipeline Equipment Company, Tulsa, Okla.

Filed Dec. 29, 1971, Ser. No. 213,598
Int. Cl. B23c 19/00
U.S. Cl. 269—27 9 Claims

An internal pipe line-up clamp for properly aligning adjacent pipe sections prior to welding, is self powered for all of its operations. All components of the device are mounted in a body portion which includes a compressed air tank to supply the motive means for driving air motors which operate the various components including a pair of powered wheels which propel the device thru pipe sections. The device includes a latch which assures proper location with regard to two adjacent pipe sections and two sets of similar radially extending members which come into proper alignment, each set adjacent one end of each pipe section ready to be powered by hydraulic means to be urged against the internal surface of the



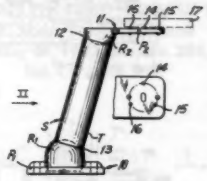
pipe sections and to form the adjacent pipe sections into a similar and uniform radius. Air motors supply the power for the hydraulic pumps. Sealing means are provided for the area of the pipe section adjacent to the radially extending members so that vacuum may be supplied to this area in order to draw molten welding metal into the space between the pipe section to insure better weld. Also described are means to supply welding flux to the edges of the pipe sections being welded from a position between the radially extending members. Means are also provided to control the presentation of flux to the weld area in relation to the speed of welding.

3,765,666

ASSEMBLING SUPPORT

Michel Jean Jules Chretiennot, Triel, France, assignor to Chrysler France, Paris, France

Filed Feb. 1, 1971, Ser. No. 111,242
Claims priority, application France, Jan. 30, 1970, 7003433
Int. Cl. B23q 3/00
U.S. Cl. 269—37 8 Claims



Assembling support for fixing two assemblies in desired positions and directions relative to each other in view of subsequent joining of the said assemblies to other parts or to each other.

According to the invention the fixture comprises a tube at each end of which is welded a ball member fixed with a plate provided with means for temporarily fastening the said assemblies respectively to the plates.

3,765,667

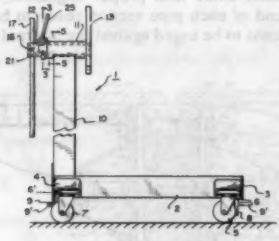
ENGINE STAND

Clyde R. Christiansen, Mukwonago, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.

Filed Apr. 14, 1971, Ser. No. 133,863
Int. Cl. B23q 1/08
U.S. Cl. 269—59 12 Claims

An engine stand for supporting an engine such as an automobile power plant for repair or other work including a sup-

port post having a slotted adaptor plate to which the rear portion of certain designs of engines can be solely supported. The engine is attached to the adaptor plate by adjustable brackets which readily allow the approximate longitudinal axis passing through the center of gravity of the engine to be aligned with the center line of the rotatable adaptor plate. A chain brake is



utilized to secure the angular position of the adaptor plate whereby the engine being supported on the stand may be rotated and secured in any selected angular orientation. The engine stand further includes a removable second post member mounted in spaced relationship with the first post to mount engines on the stand, which because of their design, are not advantageously supported solely at the rear.

3,765,668

MOUNTING ASSEMBLY FOR MACHINIST VISE

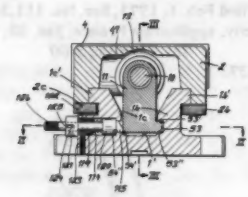
Gunter Horst Rohm, Muhlstrasse 9, Sontheim-Brenz, Germany

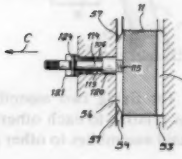
Filed Oct. 18, 1971, Ser. No. 189,970

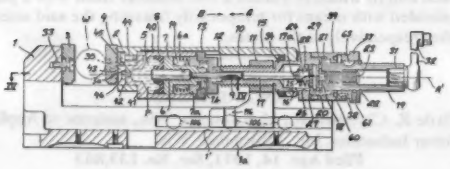
Claims priority, application Germany, Oct. 20, 1970, P 70 38 630.0

Int. Cl. B25b *1/02, 1/24*

U.S. Cl. 269—208 **7 Claims**







A machinist vise has a support carrying a stationary jaw engageable by a jaw movable by a spindle threaded into a longitudinally displaceable slide. The support is formed as a channel with a pair of inwardly opening longitudinally extending grooves which receive ribs on the side of the slide. A spring-loaded bolt is received in a transverse bore opening into one of the grooves and has a square rectangular head engageable in a complementary notch formed on the corresponding rib of the slide. A plurality of such bolts are provided along the channel to arrest the slide in a selected one of several longitudinally spaced locations. Each bolt is surrounded in its bore by a longitudinally nondisplaceable sleeve, between one end of which and a large-diameter portion of the bolt there is provided a compression spring, and on whose outwardly projection portion there are formed two diametrically opposed grooves. A transverse pin passing through the bolt is receivable in these grooves or can lie on the end of the sleeve to hold the square end of the bolt out of the path of the respective slide rib.

3,765,669

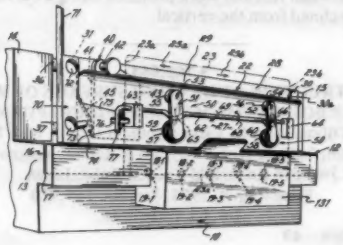
DOCUMENT CODER

Thomas R. Bucy, Dayton, and Daniel J. Bandenburg, Cincinnati, both of Ohio, assignors to O. K. Partnership, Cincinnati, Ohio

Division of Ser. No. 833,080, June 13, 1969, Pat. No. 3,622,067. This application Sept. 8, 1971, Ser. No. 178,825

Int. Cl. G06k *13/00, 13/06;* **B25b** *1/06*

U.S. Cl. 269—254 R **1 Claim**

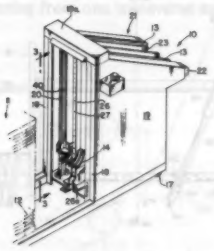


A document coder for selectively removing teeth projecting from the bottom edge of a card, thereby encoding the card, including an elongated horizontally disposed block having a slot in its upper surface for receiving and guiding the tooth-bearing edge of a card to be coded, and having a plurality of transverse horizontally disposed bores which communicate with both the exterior of the block and the card edge guide slot. Also included are a plurality of punch and die assemblies. Each assembly has a tubular bushing which is positioned within one of the transverse bores of the guide block and which is provided with a cross-slot both aligned with the card edge guide slot and communicating with a cylindrical bore formed in the bushing. The assemblies each further include a cylindrical punch slidably positioned within the bushing bore. The punch removes a card tooth registered in the bushing cross-slot when the punch cutting surface moves relative thereto. In a preferred form, the punch cutting surface makes angles of approximately 75° and 90° with vertical and horizontal planes passing through the punch axis, respectively. Also included in the coder is a spring biased card lock which is secured to a plate which defines a card insertion slot, and which has a gripper biased into the slot through an aperture in the plate for engaging the face of an inserted card and locking it therein. A movably mounted plate positioned in the card slot biases one of the vertical edges of an inserted card in a horizontal direction to properly align the card against a card registration surface located adjacent the other vertical card edge.

3,765,670
RETAINER FOR SHEET TRANSFER IN SORTING MACHINE

Dale Richard Johnson, Seattle, Wash., assignor to Norfin, Inc., Seattle, Wash.

Filed Sept. 13, 1972, Ser. No. 288,531
Int. Cl. B65h *39/06*
U.S. Cl. 270—58 4 Claims

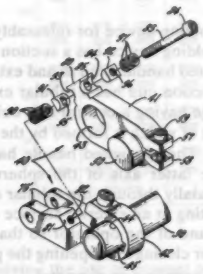


A sorting device which receives and path and in-face-to-face proximity sheets at preselected positions includes a distributor for receiving and distributing the sheets for reception by a receiver and sheet retaining means cooperating with the conveyor means of the distributor for holding the moving sheets against the conveyor while being conveyed to the position where the sheets are deflected into the receiver. The sheet retaining means includes flexible strands connected between the upper and lower ends of the conveyor path and in-face1to-face proximity with the conveyor means to hold sheets against the conveyor means while being moved to the position from which the sheets are deflected, and guide means for each of the flexible strands secured to a deflector assembly to divert the strands laterally outwardly from a point before deflection of the moving sheets to avoid interference of the strands with the moving sheets being deflected into the receiver.

3,765,671
ACTUATOR MECHANISM FOR THE FOLDER OF A PRINTING PRESS OR THE LIKE

Maurits C. Blomberg, Naperville, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed July 16, 1971, Ser. No. 163,277
Int. Cl. B65h *45/16*
U.S. Cl. 270—71 1 Claim



An actuator mechanism for a jaw in the folder of a printing press or the like which includes a pair of arms, the two arms having aligned openings for receiving a shaft which is keyed to one of the arms, the other arm being rotational on the shaft, one of the arms having a lug which axially overlaps a seat on the other arm with shims in between, the lug being penetrated by a bolt which screws into the seat so that when the bolt is tightened the arms occupy a predetermined but adjustable phase position. Half-moon bushings are interposed adjacent the shims and adjacent the bolt head to permit flat seating of the shims and flat seating of the bolt head to accommodate changes in angularity as the shim thickness is changed.

3,765,672
AUTOMATIC FEEDER FOR WORKPIECE OF FABRIC OR THE LIKE

William R. Conner, Jr., St Louis, Mo., assignor to Stahl-Urban Company, Brookhaven, Miss.

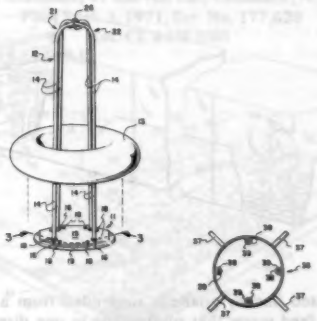
Division of Ser. No. 33,378, April 30, 1970, Pat. No. 3,670,674. This application Dec. 20, 1971, Ser. No. 209,821
Int. Cl. B65h *3/20, 5/10*
U.S. Cl. 271—10 29 Claims

Apparatus for automatically feeding workpieces of fabric or similar limp material one after another from a stack of workpieces and delivering each workpiece to a sewing machine for a sewing operation along an edge of the workpiece. The top workpiece of the stack is picked off by means of a roller which rolls up the top workpiece of the stack, advances it to a position spaced from the stack, and then retracts to unroll the workpiece, whereupon a feed device takes over to feed the workpiece into a sewing machine to start the sewing operation. The sewing machine then takes over, and the workpiece is fed through the sewing machine by the feed device of the sewing machine and stitched. In being fed through the sewing machine, the workpiece is automatically guided for contour stitching along an edge thereof. A stacker is provided on the exit side of the sewing machine for automatically stacking completed workpieces exiting from the sewing machine.

3,765,673
PNEUMATIC TUBE JUMPING TOY

Arvil Daw, 244 N. E. Main, Blackfoot, Idaho

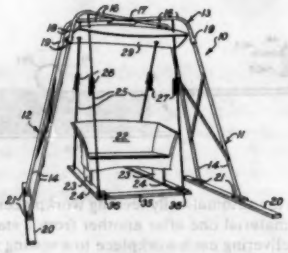
Filed May 18, 1972, Ser. No. 254,386
Int. Cl. A63b *5/00*
U.S. Cl. 272—57 E 2 Claims



A jumping toy having a flat platform base, upwardly projecting posts spaced equidistantly from one another and connected at their tops to form a tower, and a pneumatic tube

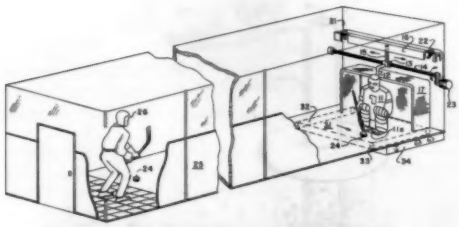
resting on the flat base and surrounding the tower. The base comprises an encircling central member with a plurality of ears secured at spaced intervals around the inner circumference thereof. The lower ends of the upwardly projecting posts are mounted on these ears. A plurality of arms radiate outwardly from the outer periphery of the encircling central member. These arms are the base support for the pneumatic tube.

3,765,674
SWING FOR LAWNS OR PATIOS
Robert W. Siler, Williamsburg, Ky.
Filed May 25, 1971, Ser. No. 146,678
Int. Cl. A63g *9/00*
U.S. Cl. 272—85 **7 Claims**



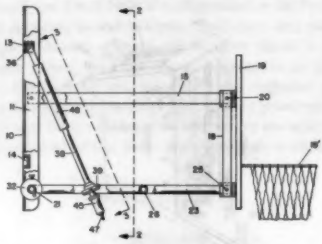
A lightweight sturdy swing structure embodies a support frame and swing seat suspension means which can be easily assembled and dismantled without tools. An optional floating canopy is provided for mounting on the flexible suspension elements of the swing. The device is formed of materials which is weather-resistant, durable and easy to clean.

3,765,675
SIMULATED HOCKEY GOALIE
Richard F. DiMarzio, c/o Slapshot Inc., 40 Court St., Brockton, Mass.
Filed July 8, 1971, Ser. No. 160,787
Int. Cl. A63b *69/00*
U.S. Cl. 273—1 B **3 Claims**



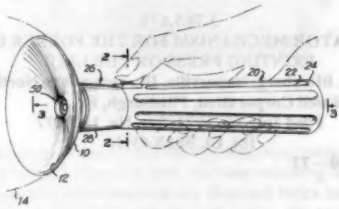
A simulated hockey goalie is suspended from a threaded collar or a feed screw that rotates first in one direction and then the other to move the simulated hockey goalie across the mouth of a hockey goal from one side to the other. A continuous belt beneath the goal and the goalie that forms part of the surface upon which a puck may slide transfers expended pucks in and around the goal into a puck recieving receptacle.

3,765,676
ADJUSTABLE BASKETBALL GOALS
Benhard M. Bearson, and Orrin C. Klungtvedt, both of Lanesboro, Minn.
Filed Jan. 15, 1971, Ser. No. 106,644
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 R **4 Claims**



A basketball goal is carried by upper and lower pairs of arms which are pivotally connected to a support to permit vertical adjustments. The adjustment is effected by means of a screw attached to the support and extending downwardly to a threaded tube which extends through a ring member carried by the lower arms and is mounted to tilt about a horizontal axis. The weight of the overhanding goal structure may be counterbalanced by torsion springs carried by lateral projections of a shaft forming part of the lower arm structure.

3,765,677
VACUUM BALL-HOLDING AND PROJECTING APPARATUS
Richard N. Carver, Erie, Pa., assignor to Louis Marx & Co., Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,643
Int. Cl. A63b *71/02*
U.S. Cl. 273—96 R **8 Claims**

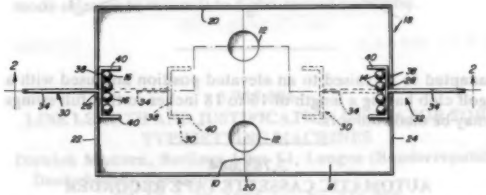


A vacuum ball-holding device for releasably holding a ball. The vacuum ball-holding device has a suction cup for holding a ball and an elongated handle fixed to and extending from the suction cup. The suction cup has a tubular extension formed with an axial passage having a central axis coinciding with an axis of a sphere part of which is formed by the interior surface of the suction cup. The elongated handle has a central axis coinciding with the latter axis of the sphere. A passage is formed extending axially through the tubular extension of the suction cup and exiting at an exterior surface of the handle at the region of the hand of the operator so that the operator's hand may be used for closing and opening the passage.

3,765,678
GAME DEVICE HAVING PUSH-PULL CUE FOR HOLDING PLURALITY OF PLAYING PIECES
Harry D. Greaney, 68 Merrick Ave., Holyoke, Mass.
Filed June 2, 1972, Ser. No. 258,989
Int. Cl. A63d *3/02*
U.S. Cl. 273—119 R **5 Claims**

Primarily for use by rival youngsters, a recreational and amusement game comprising a game board for indoor or out-

door use having a self-standing flat bottom and a flat top providing a smooth playing surface. The game board is marginally encompassed by a securely fixed rim having portions rising above the playing surface and designed to provide the outer bounds of the playing surface and resembling the disc sliding surface of a shuffle board. The rim embodies transverse end walls and interconnecting longitudinal side walls. A median area of the playing surface is provided with circular target zones, preferably shallow pockets. One set of playing pieces for a player operating from one transverse end comprises four



colored marbles. A second but differently colored set of playing pieces or marbles constitutes the set for the competitive player at the other transverse end. Each player has a push-pull cue having a handle provided at the forward end with a fork having a straight across bight portion with legs extending therefrom which constitutes a shuffle cue head for simultaneously grouping and pushing the marbles for scattering in a direction toward the opposite player's end and for hopefully landing some or all in one or more scoring pockets or target zones.

3,765,679

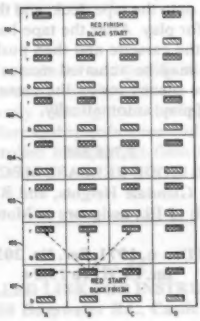
GAME EMPLOYING MAGNET PLAYING PIECES AND MAGNETIZABLE GAME

Thomas Francis O'Connell, 50 Budd Ave., Chester, N.J.

Filed Nov. 29, 1972, Ser. No. 310,227

Int. Cl. A63f *3/02*

U.S. Cl. 273—131 AD **8 Claims**



In a game involving the use of magnet playing pieces and a magnetizable game board, the element of chance is introduced by the orientation of the magnetic fields of the playing pieces which, although visually nondetectable, can be reversed by the players through physical rotation of the piece. When a player's piece is moved to a position that is a preselected critical distance from an opponent's piece, capture of the opponent's piece or by the opponent's piece occurs automatically as determined by the relative field orientations of the pieces.

3,765,680

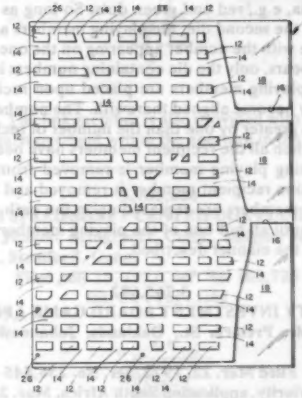
LAW ENFORCEMENT SIMULTATING BOARD GAME APPARATUS

Christos G. Paraskevas, 308 Hemluck St., Brooklyn, N.Y.

Filed July 14, 1971, Ser. No. 162,408

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 AC **12 Claims**



A game for simulating law enforcement in an urban environment comprising a game-board having an illustrative surface which simulates a plurality of intersecting pathways and a plurality of buildings or building-lots which are isolated and separated from one another through the intermediary of the intersecting pathways. A plurality of game-pieces, some of which are constituted by thief-simulating vehicles and others by police-official simulating vehicles, are provided for stepwise adancement along the intersecting pathways pursuant to random intelligence supplied by respective throws of dice. A plurality of discs which simulate currency are disposed in strategic locations on the various lots so as to be stolen by the thief-simulating vehicles when the latter terminate respective stepwise advancements proximate a lot upon which is provided simulated currency. The police-official simulating vehicles are provided for effecting arrest of the thief-simulating vehicles by appropriately "boxing-in" the thief-simulating vehicles along the pathways.

3,765,681

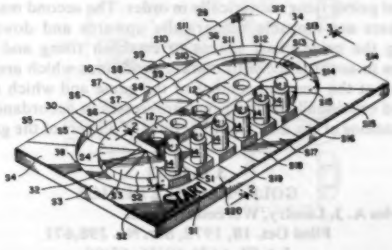
MUSICAL CHAIRS GAME

Stanley H. Glassman, 41 Harvest Ln., Commack, N.Y.

Filed Sept. 3, 1971, Ser. No. 177,620

Int. Cl. A63f *3/00*

U.S. Cl. 273—134 AE **14 Claims**



Apparatus for playing the game of musical chairs comprising a playing board defining a path and a number of playing

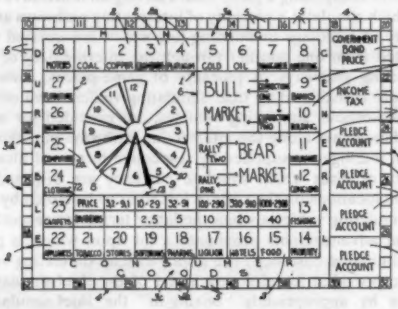
members movable in unison along said path. A number of recipient members simulating chairs are located upon the board in positions adjacent to the path and as the playing members are moved along the path to predetermined positions relative to the recipient members they are removed from the path and placed upon the recipient members. Movement of the playing members is determined by dice, which are manipulated or tossed in the playing of the game. One die contains numerical indications, e.g., representations of numbers from one to six, and the second die contains two different discrete indicia, e.g., red and green dots. So long as a green dot appears on the second die, the playing members are moved in accordance with the number appearing on the one die. After a red dot appears, only the die containing numbers is tossed and thereafter playing members are placed upon recipient members as they become aligned therewith. The number of playing members is greater by one than the number of recipient members, and when all the recipient members have been filled, the one remaining playing member is removed from play. Subsequently, one recipient member is removed and the remaining playing members are replaced upon the path and playing continues until all but one of the playing members have been removed in the manner described.

3,765,682

PROPERTY INVESTMENT BOARD GAME APPARATUS

Basil Braude, Pretoria St., Oaklands, Johannesburg, South Africa

Filed Mar. 22, 1972, Ser. No. 236,845
Claims priority, application South Africa, Mar. 26, 1971, 71
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AF **9 Claims**



Property investment game comprising a track having a series of marked spaces identifying different classes of property and preferably grouped together in different categories, the marked spaces constituting a continuous path along which a first marker can move in accordance with indications of dice, and a price chart in a continuous circuit on a common board with the track, having a series of marked spaces along which one or more second markers can move in accordance with indications of the dice, the price chart spaces indicating different prices lying numerically in order. The second marker or markers are movable numerically upwards and downwards along the price chart spaces to establish rising and falling prices in accordance with market conditions which are determined at the commencement of the game and which are adjusted continually as the game progresses in accordance with indications of the dice and/or actions of players of the game.

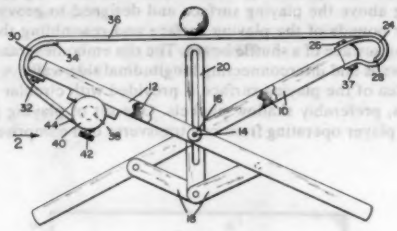
3,765,683

GOLF PRACTICE DEVICE

Charles A. J. Landry, Worcester, Mass.

Filed Oct. 18, 1972, Ser. No. 298,671
Int. Cl. A63b *69/36, 57/00*
U.S. Cl. 273—198 **5 Claims**

A tee for practicing golf shots indoors comprising a vertically adjustable stand, a flexible material extending from one side edge of the stand to the opposite side edge thereof, and a take-up device and clamp for holding the flexible material substantially taut, a practice golf ball being placeable anywhere on the surface of the flexible material. The tee is



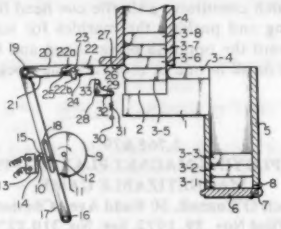
adapted to be raised to an elevated position and used with a golf club having a length of 15 to 18 inches so that full swings may be made indoors.

3,765,684

AUTOMATIC CASSETTE TAPE RECORDER

Masaaki Sato, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sept. 9, 1970, Ser. No. 70,864
Claims priority, application Japan, Sept. 11, 1969, 44/71625; Sept. 11, 1969, 44/71626
Int. Cl. G11b *23/12*
U.S. Cl. 274—4 F **5 Claims**



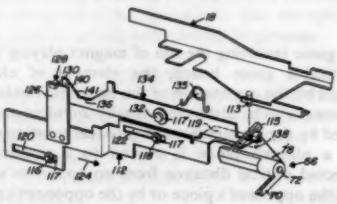
A cassette-type tape recorder which can automatically load cassettes from a stack, play them, and then reject them into another stack. In one embodiment, an electric motor drives a lever which alternately permits a cassette to drop under the influence of gravity, onto the tape deck, and then pushes it down into the recorder for play. After the tape has been played, the same lever ejects the cassette and then pushes it into a reject stack. The motor may be actuated manually, or conductive metal tape may be placed inside the cassette to actuate the lever, at the end of play, automatically.

3,765,685

RECORD MODE RELEASE MECHANISM

Alfred R. Harlan, Glendale Heights, and Ronald E. Petersen, Des Plaines, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 6, 1971, Ser. No. 205,229
Int. Cl. G11b *15/24*
U.S. Cl. 274—4 E **8 Claims**



A mode selector release mechanism for a cassette tape player-recorder includes a first slidable arm member movable

between first and second positions in accordance with the movement of a cassette from an inoperative to an operative position and vice versa, respectively. A resiliently mounted cam is attached to the slidable arm for engagement with a lever arm. Movement of the slidable arm to the first position places the cam in a predetermined relation with respect to the lever arm and movement of the slidable arm to the second position in response to the movement of the cassette from the operative to the inoperative position, causes engagement of the cam with the lever arm to pivot the latter. Pivotal movement of the lever arm causes it to engage another pivotal member holding the mode selector in a record condition. Engagement of the last-mentioned pivotal member releases the mode selector to return it to a non-record condition.

3,765,686

LINE LENGTH AND JUSTIFICATION INDICATOR FOR TYPESETTING MACHINES

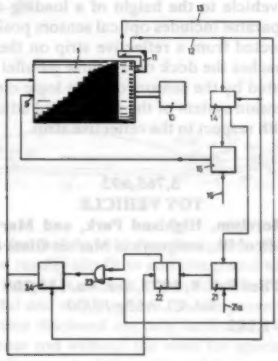
Dietrich Mattern, Berliner Allee 51, Langen (Bunderrepublik Deutschland), Germany

Filed Feb. 19, 1971, Ser. No. 116,868

Claims priority, application Germany, Feb. 21, 1970, P 20 08 102.1

Int. Cl. B41b *11/44*; G03b *21/00*

U.S. Cl. 276—11 **4 Claims**



A line length remainder and justification indicator device for use with a line composing machine in which the device employs a continuously rotating drum having preselected values of line remainder and justification information indicated thereon. A controlled intermittent flash illuminates only the desired information.

3,765,687

SEALED LINK FOR INSTRUMENTS

Frank Weiss, 158 Deepwater Rd., Castle Cove, South Wales, Australia

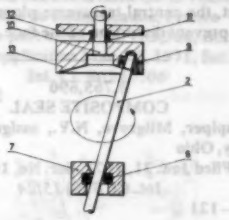
Filed Sept. 29, 1971, Ser. No. 184,719

Claims priority, application Australia, Oct. 26, 1970, 21494/70; Apr. 5, 1971, 27350/71

Int. Cl. F16j *15/00, 15/16*

U.S. Cl. 277—8 **2 Claims**

A sealed link for use in instruments such as level transmitters and switches, differential pressure transmitters and indicators, and flowmeters in which a motion or a force due to pressure is transmitted. The sealed link consists of a link member which is positioned in an aperture in a gland having therein an O-ring or the like which provides the seal, the aperture in the gland on one side of the O-ring having conical bore and the aperture having a cylindrical bore on the other side of



the O-ring. The link member is also provided with means to inhibit its axial movement within the aperture in the gland.

3,765,688

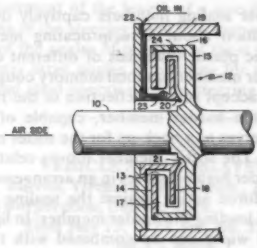
HIGH SPEED SHAFT CENTRIFUGE FLUID SEAL

Arnold E. Junker, Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed July 19, 1971, Ser. No. 163,725

Int. Cl. F16j *15/62*

U.S. Cl. 277—14 **3 Claims**



A U-shaped annular housing having a plurality of impeller vanes is fixed to a rotating shaft. A fixed radial baffle extends into the housing between the vanes and sealing is accomplished by centrifuging a fluid between the impellers and the baffle. Cool sealing fluid is continuously admitted to the housing in a radial jet stream and is exhausted by means of a plurality of bleed holes.

3,765,689

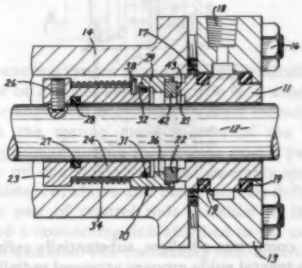
MECHANICAL SEAL CONSTRUCTION

William V. Adams, Portage, Mich., assignor to Durametallic Corporation, Kalamazoo, Mich.

Filed Sept. 27, 1971, Ser. No. 183,955

Int. Cl. F16j *15/38*

U.S. Cl. 277—26 **8 Claims**



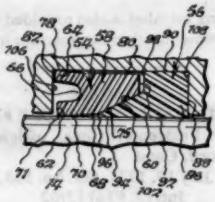
A mechanical seal construction having an annular face ring, preferably of such a material as tungsten carbide, interference-fitted within an annular flange formed on a seal ring.

One of the face ring and seal ring is undercut so that the effective holding force between the flange and the face ring, as created by the interference-fit, acts effectively only at, or at least adjacent, the central transverse plane of the face ring to substantially prevent distortion of the face ring.

3,765,690
COMPOSITE SEAL

Ward Sievenpiper, Milgrove, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed Jan. 21, 1971, Ser. No. 108,279
Int. Cl. F16j *15/24*
U.S. Cl. 277—121 14 Claims

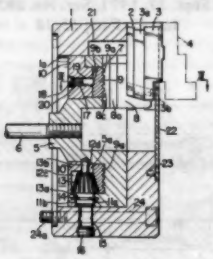


A pair of annular sealing members captively disposed in axial abutting relation about a reciprocating member and formed of synthetic plastic materials of different degrees of hardness. The softer member has total memory coupled with a quick response to accept severe deflection of the reciprocating member and the harder member, capable of enduring higher pressures, serves as a back-up for the softer member to prevent extrusion. The softer member moves relative to the harder member under high pressures in an arrangement relieving the frictional force acting against the sealing lip of the softer member and loading the harder member. In lighter duty applications a rod wiper can be combined with the harder member, and the harder member can be elongated for added bearing capability.

3,765,691
CHUCK

Shigeru Saruhashi, Tsushima, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 16, 1971, Ser. No. 208,664
Claims priority, application Japan, Dec. 17, 1970, 43/113318
Int. Cl. B23b *31/16, 31/26*
U.S. Cl. 279—71 6 Claims

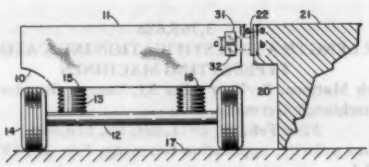


A chuck comprises a hollow, substantially cylindrical body part having several guide grooves arranged radially in its front face. Carriages for supporting jaws are respectively slidably received in the guide grooves, and the radial movement of the carriages is effected by sliders when these are moved either axially, by a movable guide block installed in the body part, or radially, by means including bevel gearing. The axial movement of the sliders, which causes a powerful radial movement of the carriages by a wedging action, is accomplished through a rod projecting from the guide block to be coupled to suitable driving means, whereas the radial movement of the sliders may be effected by manual operation.

3,765,692
LEVELING SYSTEM

Walter W. Barber, Venus; Kamil S. Kassees, Dallas, and James M. Rushing, Arlington, all of Tex., assignors to LTU Aerospace Corporation, Dallas, Tex.

Filed June 7, 1972, Ser. No. 260,575
Int. Cl. B60g *17/00*
U.S. Cl. 280—6 R 9 Claims

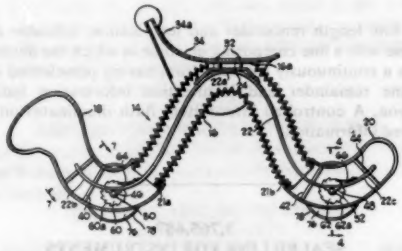


Disclosed is apparatus for automatically adjusting the floor of a moving vehicle to the height of a loading dock or platform. The apparatus includes optical sensors positioned to detect light reflected from a reflective strip on the dock as the vehicle approaches the dock on a course parallel thereto. The signals generated by the sensors operate logic circuits to control the suspension system of the vehicle and adjust the height of the floor with respect to the reflective strip.

3,765,693
TOY VEHICLE

Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 8, 1971, Ser. No. 113,206
Int. Cl. A63g *19/00*
U.S. Cl. 280—1.182 1 Claim



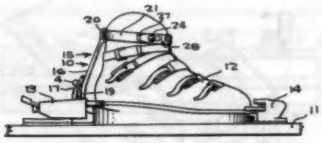
An operator-propelled vehicle characterized by the provision of a flexible medial portion having a spring frame member therein and housing portions on opposite ends of the medial portions supporting forward and rear axles and associated wheels. A pawl and ratchet mechanism is associated with each axle so that deformation of the spring imparts a driving motion to the forward wheel while holding the rear wheel against movement, and return of the spring releases the rear wheels to intermittently advance the vehicle responsive to thrust imposed on the medial portion.

3,765,694

SAFETY HARNESS OR STRAP FOR SKI BOOTS

Ivor J. Allsop, Bellingham, Wash.

Filed Oct. 21, 1971, Ser. No. 191,313
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 N 2 Claims



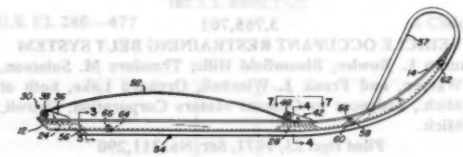
A strap arrangement for ski bindings that includes a vertical member or portion as well as an encircling portion that is adapted to surround a portion of the ski boot, or leg above the foot, and wherein there is provided a unique means for fastening the device to the ski binding and boot.

3,765,695

SKI BASE

John C. McGregor, Springfield, Ohio, assignor to Boise Cascade, Boise, Idaho

Filed July 2, 1971, Ser. No. 159,361
Int. Cl. B62b 17/02
U.S. Cl. 280—28 12 Claims



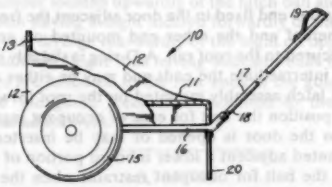
A ski base for mobile vehicles characterized by a wear rod which may be readily slip fit to and integrated with a ski body. The form of the rod is such as to provide also a towing handle of a substantial and stable nature. The improved ski and wear rod construction disclosed not only facilitates a ready application of the wear rod without the need for special fixtures but enables the placement of the wear rod by inexperienced personnel.

3,765,696

CART

Richard C. Capron, R.D. No. 1, Broadalbin, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,539
Int. Cl. B60b 1/02
U.S. Cl. 280—47.25 2 Claims



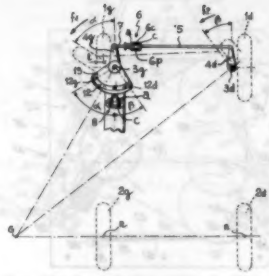
A cart device for navigating most terrain. This device consists primarily of a body portion with side walls, an axile, a pair of wheels, a kick-stand, a tube member with detatchable handle means, the handle serving to manually pull or push the cart.

3,765,697

HYDRAULIC JACK ARRANGEMENT FOR THE STEERING MECHANISM OF A VEHICLE

Emile Bobard, 17 Rue de Reon, Beaune, France

Continuation-in-part of Ser. No. 783,306, Dec. 12, 1968, abandoned. This application Mar. 10, 1971, Ser. No. 122,669
Int. Cl. B62d 7/06
U.S. Cl. 280—95 R 8 Claims



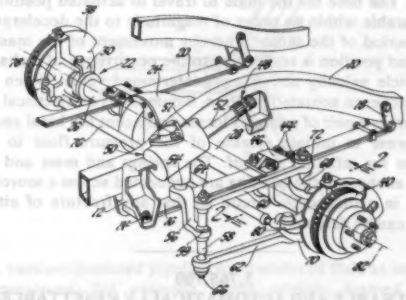
A hydraulic piston and cylinder device which permits automatic adjustment of the length of a coupling bar for the two crank arms of the steering pivot of a four-wheeled vehicle as a function of the angles of pivoting of these wheels. This device permits very large angles of pivoting for the inside wheel on the turn and good operation of the steering system.

3,765,698

VEHICLE STEERING SYSTEM

Frank C. Burrell, Orchard Lake, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed July 13, 1972, Ser. No. 271,397
Int. Cl. B60p
U.S. Cl. 280—96.2 R 4 Claims

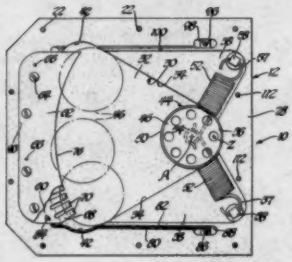


A vehicle steering system adapted to automatically compensate for twist of a wheel supporting axle in a solid axle type suspension arrangement, the steering system including a steering gear on the sprung mass portion of the vehicle, a reciprocating pitman arm on the steering gear, a pair of steering knuckles on one steerable wheel assembly spaced vertically equal distances above and below an axis defined by the solid axle, a pair of control rods attached to the steering knuckles, and a connecting link attached to the control rods and to the pitman arm. The connecting link, control rods, and steering knuckles define an articulated parallelogram the neutral plane of which contains the axle axis and the pitman arm connection so that twisting of the axle effects skewing of the parallelogram without accompanying bodily shiftable movement of the neutral plane.

3,765,699
OCCUPANT RESTRAINT SYSTEM

James F. Marquardt, Wauwatosa, and Vincent A. Orlando, Greendale, both of Wis., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 22, 1971, Ser. No. 191,859
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 3 Claims



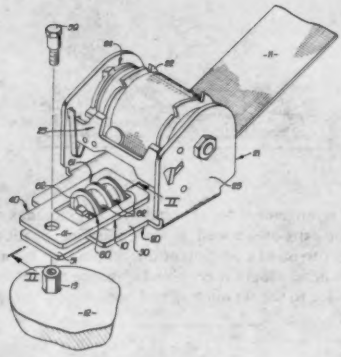
A vehicle includes a bumper or other portion which experiences a rapid change in velocity upon vehicle impact with an obstacle, an occupant compartment, an inflatable occupant restraint cushion within the compartment, and a source of pressure fluid for inflating the cushion. A sensor primarily responsive to the change in velocity of the bumper or other portion of the vehicle includes a housing of dielectric material having a sector-shaped recess, a spool-shaped mass of electrically conductive material slidable within the recess, and a pair of tension springs of electrically conductive material which are hooked between the mass and the housing to maintain the mass in unactuated position in engagement with the side walls of the recess adjacent the apical end thereof. The sensor is mounted on the bumper or other portion and is subjected to the velocity change thereof upon vehicle impact with an obstacle. The time for the mass to travel to actuated position is comparable within an order of magnitude to the deceleration time period of the sensor whereby movement of the mass to actuated position is responsive to the occurrence of a change in vehicle velocity above a predetermined value. When the mass moves to actuated position, it completes an electrical circuit across a pair of contacts located adjacent the basal end of the recess to initiate release of the pressure fluid to the cushion for inflation thereof. The springs and mass and the spring anchors to the housing are connected across a source of power in a diagnostic circuit so that any fracture of either spring can be detected.

3,765,700
REUSABLE AND AUTOMATICALLY RESETTABLE ENERGY DISSIPATING DEVICE

Joseph C. Littmann, Northridge, Calif., assignor to American Safety Equipment Corporation, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,358
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 11 Claims

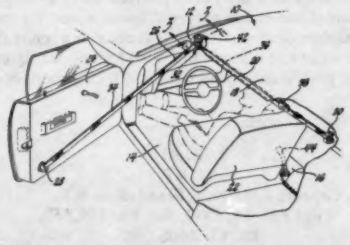
The device includes a safety belt retractor frame having a rearwardly extending slotted tongue with a centrally located axial protrusion extending forwardly into the slot; a pair of vehicle mounted slotted anchor members sandwiched around the tongue and having centrally located axial protrusions aligned with and extending oppositely to the tongue protrusion; and a plurality of coned washer springs positioned in the slots on the protrusions for being deformed, upon forward movement of the retractor due to impact of the vehicle, to provide generally linearly increasing load deflection characteristics for evenly applying and cushioning the restraining load of the safety belt on a person and for dissipating the majority of the energy of the person due to the impact with energy remaining in the coned washer springs automatically returning the retractor frame to its pre-impact position. The coned washer springs may be positioned in consecutive pairs with like ends engaging or additional coned washer springs may be stacked or nested outwardly from at least one such pair of springs.



3,765,701
VEHICLE OCCUPANT RESTRAINING BELT SYSTEM

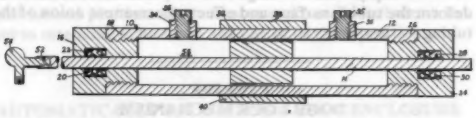
Lauren L. Bowler, Bloomfield Hills; Theodore M. Salamon, Warren, and Frank J. Winchell, Orchard Lake, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1971, Ser. No. 211,290
Int. Cl. B60r 21/02
U.S. Cl. 280—150 SB 2 Claims



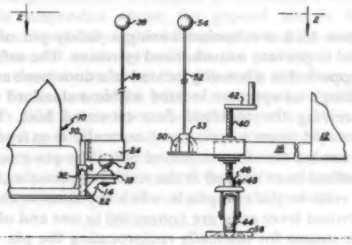
A belt has one end fixed to the door adjacent the free swinging edge thereof and the other end mounted on an inertia retractor secured to the roof rail. A D-ring is slidably received on the belt intermediate the ends and may be either engaged with a stow latch assembly mounted on the roof forwardly of the seat to position the belt for ease of occupant ingress and egress when the door is opened or may be inserted into a buckle mounted adjacent a lower inboard portion of the seat positioning the belt for occupant restraint when the door is closed with that portion of the belt between the D-ring and the door across the occupant's lap and that portion between the buckle and the roof mounted retractor across the occupant's chest. The stow latch assembly includes a pair of rotationally mounted and spring biased apertured discs, one of which has teeth which extend into the aperture of the D-ring to releasably retain the belt system in easy-enter position.

3,765,702
SWAY BAR FOR VEHICLES
William J. Clark, Tulsa, Okla.
Filed Nov. 15, 1971, Ser. No. 198,572
Int. Cl. B60d 1/14
U.S. Cl. 280—446 B 2 Claims



A device secured between a towing vehicle and a towed vehicle for reducing sway of the towed vehicle during travel. A rod member connected with one of the vehicles and having a piston head at the outer end thereof disposed within a hydraulic cylinder connected with the other vehicle. The travel of the piston in the hydraulic cylinder is controlled or retarded for controlling relative swaying movement between the vehicles.

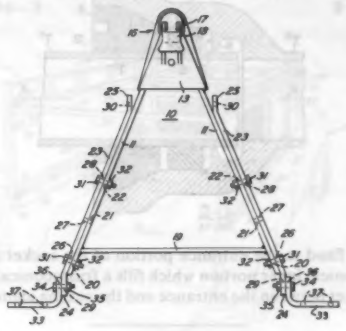
3,765,703
TRAILER HITCH GUIDING DEVICE
Frank J. Voelkerding, 230 S. Woodlawn St., Lake City, Iowa; Maynard O. Voelkerding, 4850 Lone Hill Rd., Chattanooga, Tenn., and John J. Voelkerding, 915 Trinidad St., Sp.C.48, Greeley, Colo.
Filed Feb. 14, 1972, Ser. No. 226,174
Int. Cl. B60d 1/06
U.S. Cl. 280—477 6 Claims



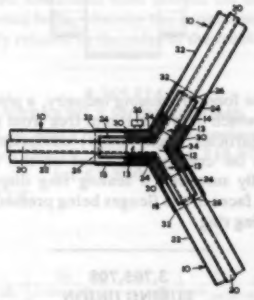
A method of coupling a towing vehicle to a towed vehicle utilizing a hitch having a hitch ball that is secured to the rear of the towing vehicle and a tongue having a socket that is secured to the front of the towed vehicle. The tongue is movable in a path transverse to its longitudinal center line. The backing up of the towing vehicle causes a guide member on the hitch to engage the tongue and move the tongue in the transverse path until the socket is above the hitch ball, after which the tongue is lowered to lower the socket onto the hitch ball. A hitch assembly, usable in the method, includes the guide member located upwardly of the hitch ball and mounted to the hitch having a bight located forwardly of the hitch ball and legs that diverge rearwardly of the bight on opposite sides of the hitch ball. Sight rods having indicator balls mounted to their tops are mounted to the rear ends of the guide member legs, and the guide member is mounted to the hitch for heightwise adjustment.

3,765,704
TOW BAR
Anthony Tierno, Philadelphia, Pa.
Filed Aug. 24, 1972, Ser. No. 283,355
Int. Cl. B60d 1/00
U.S. Cl. 280—482 5 Claims

A tow bar for vehicles is provided which has a main frame portion of generally A-shape with a detachable coupling at the apex for attachment to a ball on the towing vehicle, the frame having fixed rearwardly extending side arms with detachable side arms for attachment directly or indirectly to the vehicle to be towed, the side bars being selectively attachable at different locations to provide a plurality of widths to accommodate different towed vehicles.



3,765,705
VACUUM-INSULATED PIPELINE
Donald Harry Tantam, Cheam, England, assignor to The British Oxygen Company Limited, London, England
Filed Jan. 6, 1971, Ser. No. 104,443
Claims priority, application Great Britain, Jan. 7, 1970, 831/70
Int. Cl. F16l 59/16, 55/00
U.S. Cl. 285—47 8 Claims

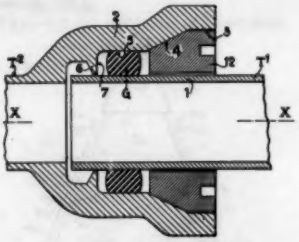


A vacuum insulated pipeline for transfer of fluid at extreme temperatures, for example liquid oxygen, formed from jacketed portions of pipeline, junction pieces and protective sleeves for the junction pieces. The jackets and the spaces between the junction pieces and protective sleeves are evacuated.

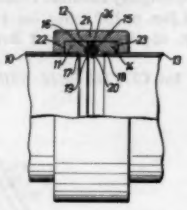
3,765,706
JOINT FOR TUBULAR ELEMENTS
Georges Eugene Bram, Pont-a-Mousson, France, assignor to Societe Des Fonderies De Pont-A-Mousson, Nancy, France
Filed June 4, 1971, Ser. No. 150,059
Claims priority, application France, June 16, 1970, 7022036
Int. Cl. F16l 21/02
U.S. Cl. 285—231 8 Claims

Joint between a pipe socket and a pipe male end. A sealing element is radially compressed between the male end and a rabbet in the socket. An annular transverse flange defines an

inner transverse end face of the rabbet and has an opening for centering the male end. A retaining ring for the sealing element is fixed to the entrance portion of the socket and has a frustoconical inner portion which fills a frustoconical cavity in the socket between the entrance and the sealing element.

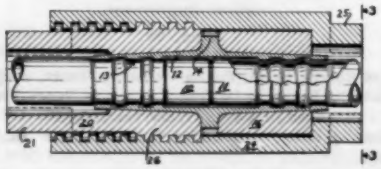


3,765,707
PIPE JOINT
Alvar Torsten Westberg, Sandviken, Sweden, assignor to Sandvikens Vernverks Aktiebolag, Sandviken, Sweden
Filed Dec. 6, 1971, Ser. No. 205,123
Claims priority, application Sweden, Dec. 9, 1970, 16636/70
Int. Cl. F16l *21/06*
U.S. Cl. 285—336 **1 Claim**



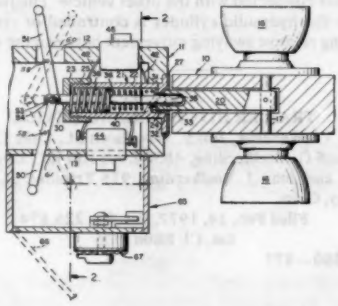
For use in the food-processing industry, a pipe coupling for flanged pipes, which provides a joint free from inside crevices (where food particles might lodge) comprises annular opposed grooves on confronting faces of the flanges which grooves partially surround a sealing ring disposed between them, the back faces of the flanges being pressed together by a resilient clamping ring.

3,765,708
TUBING UNION
George E. Pease, Renton, and Egil R. Pettersen, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Nov. 8, 1971, Ser. No. 196,664
Int. Cl. F16l *13/14*
U.S. Cl. 285—382.2 **1 Claim**



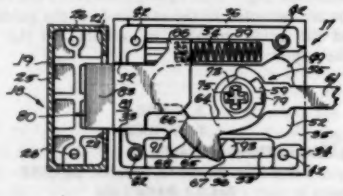
A screw-together assembly for the permanent repair of defective tubing wherein a repair sleeve having an internally serrated surface, and its associated parts are slipped over the ends of the tubing to be joined and the sleeve centrally positioned over the juncture. By applying a pair of wrenches to the ends of the assembly, a pair of swaging collars within the assembly are brought together and through forces applied by a wedging action between complementally tapered slide surfaces of the swaging collars and the sleeve, as the two threaded bodies are screwed together, the repair sleeve is deformed by radial compression causing its inner serrated surface to deform the tubing surface and effect a permanent union of the tubing.

3,765,709
DOOR LOCK MECHANISM
William Van Wyck, 3249 Ohkshire Dr., Hollywood, Calif.
Filed Sept. 10, 1971, Ser. No. 179,407
Int. Cl. E05c *11/00*
U.S. Cl. 292—33 **7 Claims**



A door lock mechanism having a safety pin of magnetic material to prevent unauthorized intrusion. The safety pin is a bolt supported in a housing located in a door jamb and extending through an aperture located within a standard receptacle for receiving the standard door-mounted bolt. The pin is reciprocated upon a spring and normally is extended by the spring toward the door-mounted bolt. The pin extends into a longitudinal bore located at the end of the door-mounted bolt which rests in the receptacle when the door is closed. Two wall-pivoted lever arms are connected to one end of the pin to provide means for manually reciprocating the pin. Access to the arms is through a locked box. A coil surrounding the pin may be activated with electric current through an interconnecting switch to cause the door bolt to be magnetically held by the striker plate receptacle and the pin.

3,765,710
DUAL ACTION NIGHT LATCH AND LOCK
John L. Orr, Rockford, Ill., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed May 10, 1971, Ser. No. 141,597
Int. Cl. E05c *1/12*
U.S. Cl. 292—169.17 **12 Claims**



A dual action night latch and lock assembly which is adapted to be secured to the interior surface of a door

separate from a knob and latch bolt assembly and acting to latch or lock the door in closed position. The assembly is actuated by a handle on the interior of the door forming an extension of an actuator for a reciprocable bolt or by a key-actuated tumbler lock on the exterior surface of the door. The reciprocable bolt is spring-biased to a normal latched position, and the handle and actuator are movable between three positions: the normal latch position, a bolt retracted position and a dead locked position. The actuator and handle includes a detent to retain the actuator in any one of its three positions.

3,765,711

AUTOMATICALLY UNLOADING CARGO ENCLOSURE

Daniel D. Hammond, Marana, Ariz., assignor to Intermountain Aviation, Inc., Marana, Ariz.

Filed Nov. 17, 1972, Ser. No. 307,488
Int. Cl. B66c *1/12*
U.S. Cl. 294—77 **1 Claim**

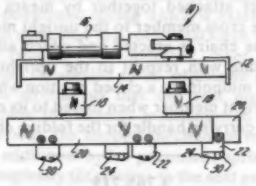
A novel cargo enclosure is adapted to contain and support a cargo while suspended above the ground and is further adapted to automatically unload the cargo when the cargo enclosure is lowered to the ground. In the preferred embodiment, a continuous net forms the side walls and floor of the enclosure. Vertical members of the net terminate with connector links which are normally held together by a latch mechanism. A ground-contact sensor automatically releases the latch mechanism when the cargo enclosure is lowered to the ground, allowing the bottom of the net to open and permitting gravity discharge of the cargo onto the ground.

3,765,712

TRANSFER MECHANISM GRIPPING DEVICE

Donald F. Hardy, Horseheads, and Thomas W. Palmer, III, Elmira, both of N.Y., assignors to Dart Industries Inc., Los Angeles, Calif.

Filed Mar. 7, 1972, Ser. No. 232,413
Int. Cl. B66c *1/42*
U.S. Cl. 294—87 R **6 Claims**



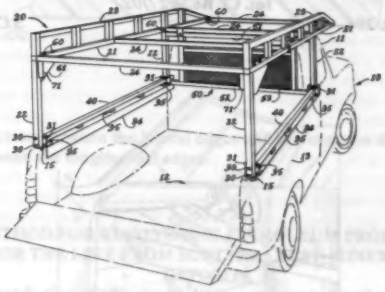
An article and more particularly a glassware gripping device constructed with opposed mating resiliently mounted gripper elements movably mounted with respect to each other and affording an inherent gripping force such that actuator applied forces may be substantially reduced. Additionally, the gripper elements per se of the device are of a modified configuration, i.e., feathered forwardly and rearwardly on their underside to enable their placement in close proximity with the concavity produced in a fluidized bed surface by article immersion.

3,765,713

CARRIER RACK FOR PICK UP TRUCKS

L. T. Sultt, P.O. Box 272, Granbury, Tex.

Filed Mar. 30, 1972, Ser. No. 239,563
Int. Cl. B60p *3/40*; B62d *33/02*
U.S. Cl. 296—3 **5 Claims**



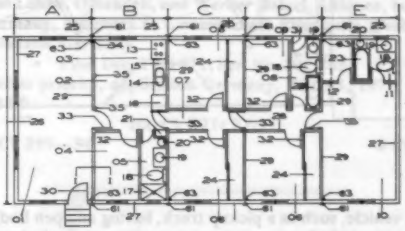
A carrier rack, readily applicable to pick up trucks and removable therefrom, for use of electricians, plumbers, contractors, painters, and others who may need to haul material which is substantially longer than the bed of the truck. Consists of an elevated rack above the truck bed, and extending forwardly beyond it, over the cab of the truck, having supporting posts extending upwardly from the sides of the truck bed, at its corners. The supporting posts are connected at their lower ends, by belts extending transversely thereof, generally parallel to the longitudinal axis of the truck, to bracket having angle iron bases for overlying engagement with the upper edge portions of the sides of the truck bed, to which they are removably connected by other belts, and having upstanding planar portions in juxtaposed relation to one side of the posts, respectively, and extending transversely of the truck bed, and having elongated horizontal slots therein for engagement by the first mentioned belts, whereby the supporting posts are adjustable laterally relative to the sides of the truck bed.

3,765,714

VERSATILE MOBILE HOME

Dicksen T. W. Lau, 450 17th Ave., San Francisco, Calif.

Filed Jan. 19, 1972, Ser. No. 218,874
Int. Cl. B60p *3/32*
U.S. Cl. 296—23 R **3 Claims**



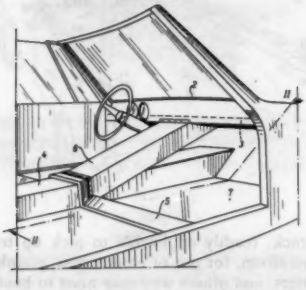
A Versatile Mobile Home comprises a combination of sections which can be disassembled and rearranged in any order at the discretion of the owner. Said sections can be added one after another to the combination and also can be taken away from the combination as the situation requires. Each section provides facilities to be used as an independent living unit. The sections can be hauled from place to place either separately one by one by an automobile or jointly as a train by a truck.

3,765,715

REINFORCING STRUCTURAL ELEMENT FOR VEHICLE BODY

Enzo Franchini, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed Nov. 24, 1971, Ser. No. 201,721
Claims priority, application Italy, Dec. 3, 1970, 71032 A/70
Int. Cl. B62d 27/02
U.S. Cl. 296—28 G 3 Claims



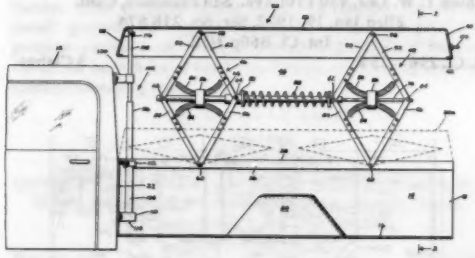
This invention provides a reinforcing structural element interconnecting existing structures at the floor level or rear wall of a vehicle body interior space and existing front transverse elements at the instrument panel or windshield base. The reinforcing element, which may be of box-or U-section, strengthens the body against longitudinal deformation in the event of a frontal collision.

3,765,716

EXTENSIBLE TOP FOR OPEN VEHICLE BODY

James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.

Filed Mar. 27, 1972, Ser. No. 238,254
Int. Cl. B60j 7/08
U.S. Cl. 296—137 B 4 Claims



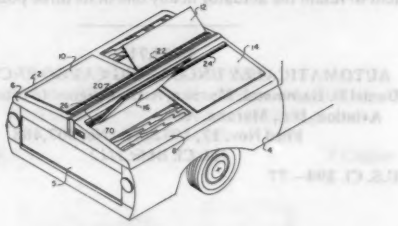
A vehicle, such as a pickup truck, having an open body and a top movable between an upper position spaced above the body and a lower position forming an enclosure therewith. A pair of spaced extensible mechanisms respectively interconnect the body and top. Each of the mechanisms comprises a pair of spaced toggle linkages each having four link elements pivotally connected together at first and second opposite pivot points and at a third and fourth opposite pivot points to form a parallelogram, the first pivot points being connected to the top and the second pivot points being connected to the body. The third pivot points are interconnected for movement in unison on an axis and the fourth pivot points are guided for movement on the axis.

3,765,717

COVER FOR A PICK-UP TRUCK

Clarence F. Garvert, 1013 N. Second St., Garden City, Kans.

Filed Feb. 11, 1971, Ser. No. 114,602
Int. Cl. B60j 7/10
U.S. Cl. 296—137 B 4 Claims



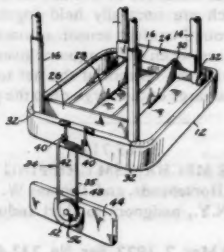
A cover for a pick-up truck contains two panels which may be swung into a vertical or outward horizontal position. Each panel has two doors to gain access into the load carrying box of the pick-up and attached to each panel and the frame is a torsion assembly to assist in swinging the panels into the vertical or horizontal positions.

3,765,718

FOLDING CHAIR

Chin Shu Chen, 426 S. First St., Apt. 7, Ann Arbor, Mich.

Filed Jan. 10, 1972, Ser. No. 216,637
Int. Cl. A47c 4/04
U.S. Cl. 297—17 8 Claims



A folding chair having a back with an upright member with a cross member attached together by means of a fastener which locks the cross member to the upright member at right angles when the chair is erected and which allows the cross member to rotate with respect to the upright member and slide toward its midpoint to a closed position when the chair is folded. The upright member when folded to its closed position also serves as a carrying handle for the folding chair.

3,765,719

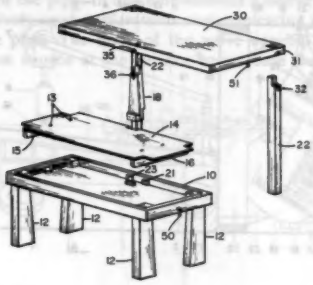
COLLAPSIBLE COMBINATION TABLE AND BENCH

Robert H. Silver, Schroeder, Minn., assignor to Wanous, Thomas K., Minneapolis, Minn., a part interest

Filed Dec. 9, 1971, Ser. No. 206,374
Int. Cl. A47b 39/00
U.S. Cl. 297—170 8 Claims

A collapsible combination table and bench in which the table portion is supported at three points, one of the points being generally near the center of the bench portion. The bench portion is hollow so as to contain the three table sup-

ports and the four bench legs so that the entire assembly may be folded down into a compact package. The table portion is



sized and shaped to fit over the bench portion for compact portability and to permit the assembly to be used solely as a bench as well.

3,765,720

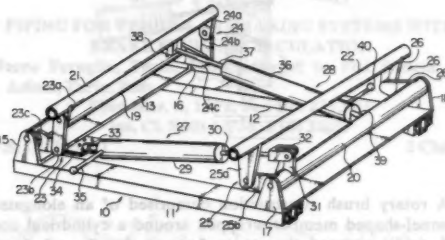
POSITION ADJUSTABLE SUPPORT MECHANISM

Shoji Sakai, Kanagawa-ku, Yokohama, Japan, assignor to Nissan Motor Company, Limited; Atsugi Motor Parts Company, Limited and Ikeda Bussan Company, Limited, all of Yokohama City, Japan

Filed July 2, 1971, Ser. No. 159,328

Int. Cl. A47s *19/00*

U.S. Cl. 297—330 **11 Claims**



Herein disclosed is a position adjustable support mechanism which is adapted to vary the height and/or inclination of a load supported on the support mechanism. The support mechanism uses a hydro-pneumatic spring which is extendable and contractable when subjected to a rotational force which is exerted thereon by rotating an operated lever. The support mechanism may be applied to an adjustable seat of a motor vehicle or an aircraft so that the seat position is varied steplessly. Where the support mechanism is combined with the adjustable seat, the support mechanism may be modified to include an additional hydro-pneumatic spring to permit the seat back to steplessly tilt relative to the seat proper.

3,765,721

LUMBAR SUPPORT PADS

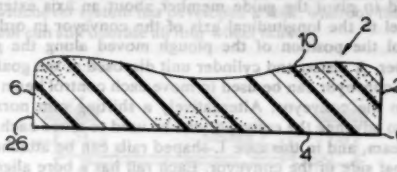
Bernard Curtis Watkin, 32 West Square, London, England

Filed June 15, 1972, Ser. No. 263,298

Int. Cl. A61g *7/06*; A47c *7/02*, *1/10*

U.S. Cl. 297—460 **8 Claims**

A lumbar support pad for providing support to a user's back by engagement with the small of the user's back. The pad is preferably formed from a resilient low density foamed material. The back-engaging surface is complexly curved in a convex



direction between the lateral edges and in a concave direction between the longitudinal edges.

3,765,722

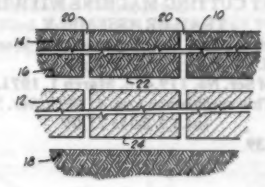
METHOD FOR RECOVERING PETROLEUM PRODUCTS OR THE LIKE FROM SUBTERRANEAN MINERAL DEPOSITS

Robert E. Crumb, Blackwell, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 2, 1971, Ser. No. 168,250

Int. Cl. E21c *41/10*

U.S. Cl. 299—2 **19 Claims**



A method for in situ mining, retorting and mineral recovery of hydrocarbon bearing deposits, such as oil shale, wherein a plurality of vertical kilns are formed between two horizontal vertically spaced access shafts using a vertical shaft forming apparatus including an in situ crushing apparatus to obtain a bed of crushed minerals having a relatively uniform particle size distribution in each kiln shaft, substantially all of the particles being retorted in situ to recover the hydrocarbon and the minerals recovered by leaching.

3,765,723

MINERAL MINING INSTALLATIONS

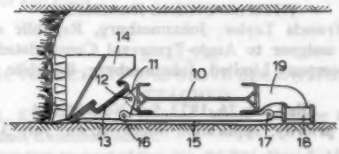
Armin Lobbe, Oberaden, and Werner Rafael, Altlunen, both of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Dec. 17, 1971, Ser. No. 209,255

Claims priority, application Germany, Feb. 11, 1971, P 21 06 488.0

Int. Cl. E21c *27/35*

U.S. Cl. 299—34 **8 Claims**



A mining installation is composed of a longwall conveyor having a plough guide member pivotably attached to its

mineral face side by way of plates or the like. A floor rail or a series of control beams is disposed beneath the conveyor and is used to pivot the guide member about an axis extending parallel to the longitudinal axis of the conveyor in order to control the position of the plough moved along the guide member. A piston and cylinder unit disposed at the goaf side of the conveyor can be used to move each control beam relative to the conveyor. Alternatively a shifting ram normally used to advance the conveyor can be used to move each control beam, and in this case L-shaped rails can be attached to the goaf side of the conveyor. Each rail has a bore alignable with one of a series of bores in the associated control beam. A push-in bolt can lock the rail to the beam so that the normal advancement of the conveyor can take place by operation of the shifting ram. In another construction the floor rail is attached to the cylinder of a piston and cylinder unit and the piston rod of the unit is connected to the goaf side of the conveyor. A telescopic prop is used to clamp the cylinder of the unit so that pivoting of the guide member can be effected through lateral movement of the conveyor.

3,765,724

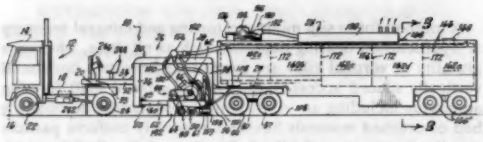
PAVEMENT CUTTING MACHINE WITH TRACTOR-TRAILER ASSEMBLY

Cecil W. Hatcher, West Covina, and Gene Warner, Whitter, both of Calif.

Division of Ser. No. 119,476, March 1, 1971, Pat. No. 3,703,316. This application Aug. 4, 1972, Ser. No. 278,079

Int. Cl. E01c *23/09*

U.S. Cl. 299—39 **6 Claims**



A pavement cutting machine with tractor-trailer assembly for cutting bumps or grooves. A tractor has a hitch with a cutter trailer and a tank trailer. The tank picks up the sludge from the cutter, filters it and recirculates the filtered water to the cutter. One or more hydraulic cylinders for the cutter or cutters act against a frame member which supports the tank whereby the weight of the tank snubs the cutter or cutters. The tractor has an alternative low speed drive from its engine.

3,765,725

ROCK BORING MACHINE HAVING DRIVEN ROTORS WITH SWINGING HAMMERS

Richard Francis Taylor, Johannesburg, Republic of South Africa, assignor to Anglo-Transvaal Consolidated Investment Company Limited, Johannesburg, Republic of South Africa

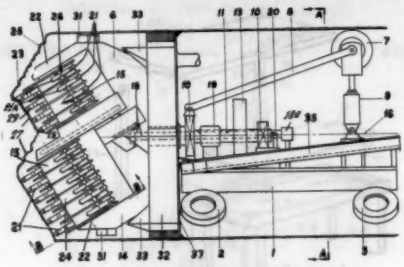
Filed July 26, 1971, Ser. No. 165,904

Claims priority, application South Africa, July 31, 1970, 5311

Int. Cl. E01q *3/04*

U.S. Cl. 299—56 **13 Claims**

A rock boring machine utilizing a cutting head in the form of at least one rotor carrying rock breaking hammers pivotally mounted on the rotor to swing freely between end stops. The rotor is mounted on the end of a forwardly projecting rotatable shaft supported on a rigid frame and the axis of the rotor is inclined to the axis of the shaft at an angle of less than 80°. Independent drives are provided for the rotor and shaft and the cutting head is adapted to bore a hole which will accommodate the whole machine.



3,765,726

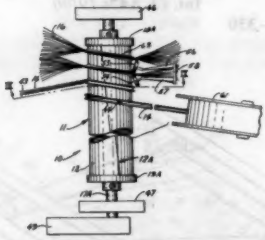
METHOD OF MAKING A BRUSH STRUCTURE

Gaylord J. Clark, P.O. Box 216, Coloma, Mich.

Division of Ser. No. 120,138, March 2, 1971, Pat. No. 3,688,335. This application Aug. 14, 1972, Ser. No. 280,447

Int. Cl. A46b *7/10*

U.S. Cl. 300—21 **6 Claims**



A rotary brush construction comprised of an elongated, channel-shaped member wrapped around a cylindrical core and rigidly secured thereto to form a plurality of closely spaced, spiral flights by which the brush elements are firmly secured to the core. The method is carried out by cutting the core substantially lengthwise thereof into two or more segments, either before or after the flights of the channel-shaped member are secured thereto, and mounting the channel-shaped member upon the core with the brush elements rigidly seated in said channel-shaped member. The parting surfaces between the core segments are not parallel with the axis of the core. Alternatively, the brush elements may be rigidly seated between the flights of the channel-shaped elements by bending the adjacent flanges on a pair of adjacent, spaced flights of the channel-shaped member toward each other to clamp the brush bristle to the cylindrical core.

3,765,727

PROCESS AND APPARATUS FOR TRANSPORTING MINED DEPOSITS FROM THE SEA FLOOR

Joseph G. Santangelo, Morristown, N.J.; Marne A. Dubs, New Canaan, Conn., and Clifford E. Schatz, Solana Beach, Calif., assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Jan. 21, 1972, Ser. No. 219,623

Int. Cl. B65g *53/30*

U.S. Cl. 302—14 **16 Claims**

Air is withdrawn from an air lift hydraulic pipe to control turbulence and velocity of flow through the pipe. The air is

withdrawn at a location substantially above the air injection station where the expanding air causes excessively high velocity and turbulence which cause nodule breakage and wear of the pipe. In one embodiment a sleeve valve is used to selectively open perforations communicating with the interior of the pipe. The body of the valve can be connected to a vacuum source at the surface to increase the amount of air

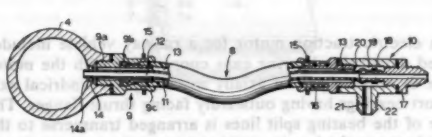
removed from the pipe. In a second embodiment a perforated member is located within the pipe and flow of air to the outside of the pipe is controlled by valves. The valves also permit selectively connecting the perforated member to a vacuum source at the surface. Hydraulic control arrangements permit regulating the valves from the surface vessel to control the rate of removal of air or gas from the pipe.

3,765,728

PIPING FOR VEHICULAR BRAKING SYSTEMS WITH BRAKE FLUID RECIRCULATION

Marco Peruglia, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed Mar. 6, 1972, Ser. No. 231,931
Int. Cl. B60t *13/16*; F16l *39/02*
U.S. Cl. 303—1 **2 Claims**



This invention avoids the problem of excessive and vulnerable piping in braking systems with brake fluid recirculation by using flexible piping according to this invention, consisting of two coaxial pipes, the inner of which is used to deliver brake fluid to a brake actuator cylinder and the outer of which forms a return flow duct from the cylinder, a three-way connector being fitted to the piping at the end remote from the cylinder.

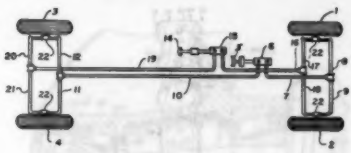
3,765,729

AUTOMOTIVE VEHICLE EMERGENCY AIR BRAKE SYSTEM

Francis J. Toomey, 1888 Kearns Ave., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 870,372, Nov. 19, 1969. This application May 15, 1972, Ser. No. 253,366
Int. Cl. B60t *15/16*
U.S. Cl. 303—13 **2 Claims**

One form of the invention is an automotive vehicle, hydraulic emergency brake system comprising two parallel systems, one operated by the foot pedal brake and the other, by the emergency brake. To each wheel cylinder is connected a Tee valve having one arm connected to each system and which Tee valve is pressure-responsive so as to automatically close off whichever system has developed a leak, whereby the other system can still operate all four wheel brakes.



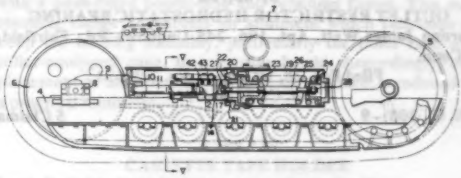
Another form of the invention is a similar system for an air brake system for buses, tractors and trailers, wherein a hand operated valve is used as the emergency valve for emergency braking.

3,765,730

DEVICE FOR AUTOMATICALLY ADJUSTING TRACK SHOE ASSEMBLY IN CRAWLER TRACTOR

Susumu Ishida, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 30, 1971, Ser. No. 167,773
Claims priority, application Japan, July 31, 1970, 45/76231
Int. Cl. B62d *55/30*
U.S. Cl. 305—10 **7 Claims**



A device for automatically adjusting the track shoe assembly in a crawler tractor which comprises serially providing a spring whose rear end is supported on the track frame, a capacity variable pressure storing chamber containing pressurized fluid, and a capacity variable adjusted pressure chamber for containing pressurized fluid for operating the piston provided on the end of the rod connected to the front idler of the track assembly; automatically feeding the pressurized fluid of said pressure storing chamber into said adjusted pressure chamber when the pressure of the fluid of said adjusted pressure chamber is insufficient to expand the track by operating the front idler through said piston with said automatic feeding of pressurized fluid, wherein when the pressure of the fluid of said adjusted pressure chamber is large, said spring is loosened through the pressurized fluid within said pressure storing chamber to reduce the impact given to said front idler and track.

3,765,731

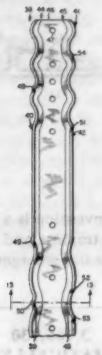
TRACTION CLEAT AND DRIVE BELT WITH SUCH ATTACHED

James A. Kilbane, Jr., Excelsior, Minn., assignor to Norman W. Lund, Excelsior, Minn.

Continuation-in-part of Ser. No. 94,396, Dec. 2, 1970. This application Oct. 8, 1971, Ser. No. 187,653
Int. Cl. B62d *55/24*
U.S. Cl. 305—35 EB **10 Claims**

A traction cleat for a snowmobile drive belt which provides for resistance to slippage in both the longitudinal and transverse direction relative to the snowmobile and which com-

prises a base with longitudinal, latitudinal, and vertical dimensions, and a plurality of projections which (1) are integral with said base, (2) all extend in the same and vertical direction from said base, and (3) are spaced along the longitudinal dimension of said base, said projections being aligned longitudinally relative to said base such that there are at least two longitudinal alignments of projections with the projections of at least one of said alignments being at an angle of less than 90° relative to the longitudinal-latitudinal plane of said base; and a drive belt with said cleats attached thereto.

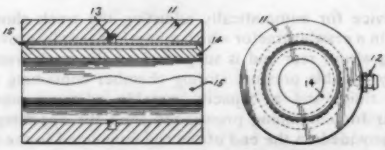


3,765,732

OUTLET RESTRICTOR HYDROSTATIC BEARING

Gordon James Watt, Apt. 106, 245 Unquowa Rd., Fairfield, Conn.

Filed Feb. 28, 1972, Ser. No. 229,631
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 5 Claims



An improved structure for outlet restrictor hydrostatic bearings of the tapered, stepped, and grooved clearance types wherein the bearing surfaces are formed on flexible membranes, supported at the edges by raised lands on the shafts and/or the bores, thereby simplifying the manufacturing process and providing improved bearing action after the manner of the flexible membrane bearing.

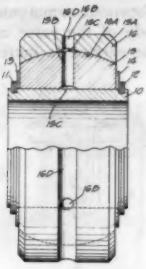
3,765,733

BEARING ASSEMBLY

Kenneth V. Hackman, Arcadia, Calif., assignor to Southwest Products Co., Monrovia, Calif.

Filed Sept. 13, 1971, Ser. No. 179,829
Int. Cl. F16c *23/04*
U.S. Cl. 308—72 5 Claims

A bearing assembly includes a cylindrical bushing and a ball-shaped bearing member having a spherical bearing surface retained on said bushing, together with a race member having a spherical bearing surface complementary with a ball surface and contacting the same, the ball member is retained on the bushing by a retaining ring in a groove on the bushing.

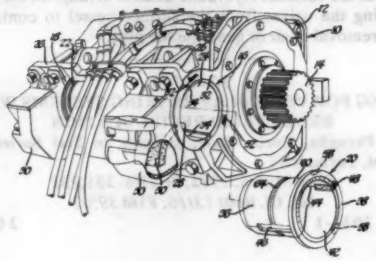


3,765,734

RAILWAY TRACTION MOTOR AND AXLE SUPPORT BEARING THEREFOR

David W. Peterson, Oak Brook, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed July 24, 1972, Ser. No. 274,398
Int. Cl. F16c *17/00*
U.S. Cl. 308—132 6 Claims



An electric traction motor for a railway vehicle includes spaced detachable bearing caps cooperating with the motor frame to retain a pair of axially spaced split cylindrical axle support bearings having outwardly facing thrust flanges. The plane of the bearing split lines is arranged transverse to the plane between the bearing caps and motor frame to maintain the bearing split portions out of the heavily loaded zones of the bearings. Proper orientation of the bearings is provided by spaced recesses on the inner sides of the bearing flanges, which engage abutment means on the traction motor frame. The recesses and abutments provide for installation of the bearings in the traction motor frame while clamped in assembled position around the associated axle.

3,765,735

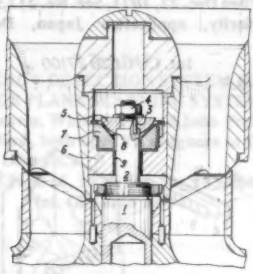
BEARING DEVICE FOR A ROTATING SHAFT

Louis Bourgain, 10 bld. General Exelmans, Le Chesnay; Gaspard Dreyfus, 3, rue des Gatines, L'Hay les Roses; Marcel Le Nabour, 5bis, avenue du General Bonaparte, Maisons Lafitte, and Georges Rouquie, 12, rue Rene Dorme, Fontenay le Fleury, all of France

Filed Feb. 8, 1972, Ser. No. 224,568
Claims priority, application France, Feb. 9, 1971, 7104241
Int. Cl. C16c *23/00*
U.S. Cl. 308—140 1 Claim

The bearing device for a rotating shaft which is lifted and centered by means of fluid-film bearings of the self-generating

pressure type, comprises a pivot in the form of a spherical cap having an axis which coincides with the rotating shaft and rigidly fixed to this latter, a supporting track of self-lubricating material for the cap having a profile of revolution which is



widened-out towards the flat face of the spherical cap. The axis of the track coincides substantially with the axis of the rotating shaft and the spherical cap bears on and cooperates with the track during periods of starting and stopping of the shaft.

3,765,736

COMBINED RADIAL AND THRUST BEARING

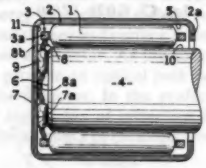
Alfred Pitner, Paris, France, assignor to Nadella, Rueil-Malmaison, France, a part interest

Filed Jan. 13, 1972, Ser. No. 217,466

Claims priority, application France, Feb. 11, 1971, 7104637

Int. Cl. F16c *19/34*

U.S. Cl. 308—174 **17 Claims**



Combined radial and thrust rolling bearing having inseparable component parts for a shaft defining an inner raceway for the radial bearing and a raceway for the thrust bearing. The combined bearing comprises; a radial cage for the needles of the radial bearing and a thrust bearing cage for the rolling members of the thrust bearing. A case defines a cylindrical outer raceway for the radial bearing needles and a radial support for the thrust bearing and defines at the end opposed to the radial support a flange for retaining the radial bearing cage. The outside diameter of the thrust bearing cage exceeds the diameter of a geometric cylinder inscribed within and tangent to the needles and this cage retains the thrust bearing rolling members in respect of movement away from the radial support. The needles are retained by the radial bearing cage in respect of movement radially inwardly of the bearing. The cages have adjacent rim portions capable of coming into sliding contact with each other and relatively rotating. Means are provided which define a raceway adjacent the radial support for the thrust bearing rolling members. The radial bearing cage is axially retained by direct contact with either the radial support or with a portion of the thrust bearing cage which is in direct contact with the radial support.

3,765,737

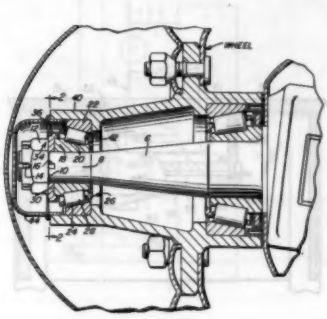
WHEEL BEARING SAFETY WASHER

Roosevelt L. Hatch, 1553 Alder Street, Norfolk, Va.

Filed Nov. 19, 1971, Ser. No. 200,464

Int. Cl. F16c *33/00*

U.S. Cl. 308—211 **6 Claims**



A guard, more particularly, a safety washer for use in conjunction with the outer anti-friction bearing assembly of a front wheel construction currently in use by manufacturers of motor vehicles, for example, by General Motors and other automobile manufacturers. This unique washer is made of heavy duty metal, can be readily lined up with and slid inwardly over the usual spindle and capped over and retentively held in its functioning position on the inner ring-type race of the bearing assembly. The outer marginal edge of the washer is provided with a push-fitted positioning and retaining flange. This outstanding flange constitutes an abutment which functions to keep the bearing assembly, particularly the inner race and roller-equipped cage, in a captive locale. Accordingly, displacement of the wheel should the cage fracture, is reduced to a practical minimum.

3,765,738

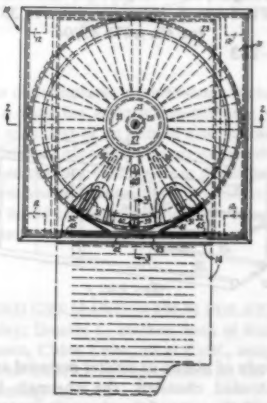
CASSETTE TAPE HOLDER

Louis R. Cobb, 1112 E. Deimas Ave., Nashville, Tenn.

Filed July 2, 1971, Ser. No. 159,340

Int. Cl. A47*l 3/10*

U.S. Cl. 312—11 **1 Claim**



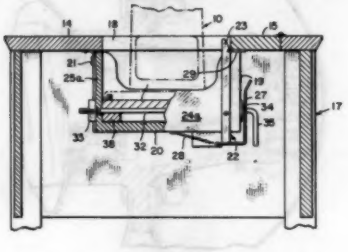
An enclosed cassette tape holder including a circular magazine accessible through sliding doors and having a numbered index visible through the top wall to indicate the cassette available through the sliding doors. A chart is mounted beneath the holder to be slid from beneath the holder to a visible position to be able to see a title and number list of the cassettes stored in the holder.

3,765,739

CONVERTABLE SEWING MACHINE CABINET

Lester W. Williams, Sutton, W. Va.

Filed Oct. 17, 1969, Ser. No. 867,141
Int. Cl. A47b *81/00*
U.S. Cl. 312—30 1 Claim



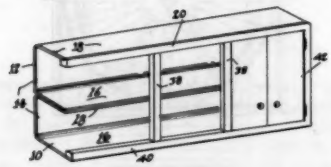
A sewing machine cabinet for receiving a sewing machine head of the type having a free arm which cabinet permits the elevation of the sewing machine to a first elevation for free arm operation and to a lower elevation for flat bed operation. The sewing machine cabinet includes a table top with a sewing machine cutout therein. The sewing machine head is secured to a mounting platform which platform cooperates and moves vertically within a platform carriage or well of like configuration supported beneath the sewing machine cutout to guide the vertical movement of the sewing machine head within the cutout. Locking means are provided to secure the mounting platform to the platform carriage to maintain the sewing machine head at the selected elevation. Hinges between the platform carriage and the table top permit the sewing machine head to be swung into storage position.

3,765,740

CABINETS

Fred R. Mastrangelo, 200 Prospect St., Lunenburg, Mass.

Filed Apr. 5, 1972, Ser. No. 241,352
Int. Cl. A47b *47/04*
U.S. Cl. 312—263 5 Claims



Cabinets made of plastic or similar material and comprising elongated extruded channels, the channels being stacked horizontally with the arms of the channels in contact with each other providing a closed back and an open front with as many shelves as may be desired, and new and improved supporting columns and doors thereon.

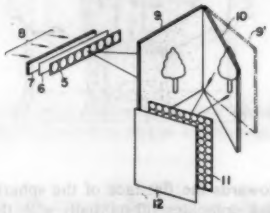
Cabinets made of plastic elongated sheets and including special new and improved extruded brackets mounting and connecting the sheets together to form a back, a bottom, shelves, and new and improved front rails with vertical stiles.

3,765,741

METHOD OF FORMING THREE-DIMENSIONAL IMAGES USING MULTI-IMAGE HOLOGRAM

Yoshiaki Kimura; Masanori Kawai, both of Hachiohji-shi, Tokyo, and Tadashi Kasahara, Nakano-ku, Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,535
Claims priority, application Japan, Dec. 26, 1970, 45/118907
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 14 Claims



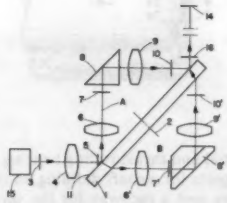
A method of forming a three-dimensional image, comprising the general steps of taking a picture of an object illuminated by incoherent light through a lens array comprising a small number of lenses, projecting the image onto a diffusion screen through a lens array having the same performance as that of the lens array used for producing the image, and recording the projected image through the second lens array.

3,765,742

OPTICAL DEVICE

Sten Walles, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed June 7, 1972, Ser. No. 260,594
Claims priority, application Sweden, June 7, 1971, 7386/71
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 4 Claims



The present invention relates to a device to produce, starting from a slit scanned in its transverse direction, alternately two slits scanned at a certain angle to each other in their transverse directions in the same image plane. Starting with the slit scanned in its transverse direction, the device in accordance with the invention produces two slits scanned at a certain angle to each other in their transverse directions in the same image plane. This slit scanned in its transverse direction may be generated, for example, by means of a device comprising a straight, equilateral, transmitting polygonal cylinder placed behind a stationary slit which is arranged to rotate about its axis of symmetry parallel to the longitudinal direction of the slit.

The two slits scanning in the same image plane at a certain angle to each other in their transverse directions are generated by means of the device built in accordance with the principles of the present invention by dividing the light alternately in

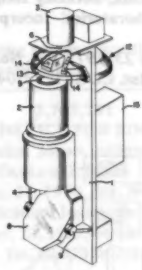
time between two alternative ray paths. The device including a rotating glass disk with reflecting areas being used for the division and the ray paths have such optical characteristics that the timing of the scanning slits is not affected by wobble in the bearings of the rotating glass disk.

3,765,743

OPTICAL ENERGY DETECTION SYSTEM INCLUDING IMAGE PLANE SCANNING SYSTEM

David Herbert Reaves, Whitesboro, and John Pearson Walker, Jr., New Hartford, both of N.Y., assignors to General Electric Company, Utica, N.Y.

Filed June 16, 1971, Ser. No. 153,660
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 16 Claims



In an optical energy detection system, objective optics provide optical energy to a scanning wheel carrying a plurality of prisms. Each prism is a rhomboid. A first reflecting surface of the prism, preferably normal to the diameter of the wheel, reflects optical energy to a second surface radially inwardly of the first surface, and the second surface reflects optical energy which is focused on a detector. As the scanning wheel turns, successive prisms provide an optical path between the objective optics and the detector. In the preferred embodiment, each prism has a high index of refraction for increasing the mechanical back focal length of the objective optics.

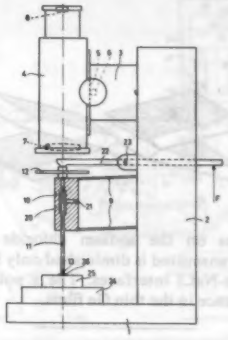
3,765,744

MICROSCOPE AND TOOL FOR MECHANICALLY AND/OR ELECTRICALLY CONNECTING A SEMICONDUCTOR DEVICE TO A SUBSTRATE

Jacobus Adrianus Johannes Maria Van Noord; Leonard Henry Rapmund, and Jan Mathieu Marie Tacken, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,758
Claims priority, application Netherlands, Oct. 7, 1970, 7014698
Int. Cl. G02b *21/00*
U.S. Cl. 350—81 5 Claims

Device for mechanically and/or electrically connecting "beam leads" to current conductors on a substrate, said device comprising a support which supports a chisel holder with a chisel connected thereto, a support for the substrate, means to position the chisel relative to the support and a microscope which is arranged straight above the chisel, and the axis of which substantially coincides with the axis of the chisel holder, said microscope having a range of definition in depth which, during positioning, comprises both the lower surface of the chisel and the upper surface of the substrate, the support having a shape which passes the rays from the chisel to the microscope to a considerable extent or consisting of an optically translucent material, the chisel holder being present substantially entirely within the region occupied by said rays.

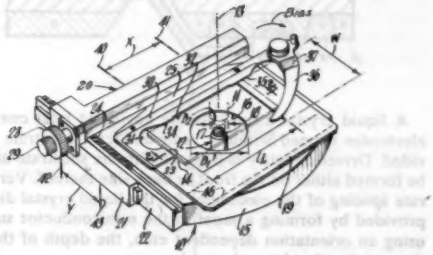


3,765,745

MICROSCOPE STAGE

Hans Peter Burboeck, Morris Plains, N.J., assignor to Carl Zeiss-Stiftung, Oberkochen/Wuerttemberg, Germany

Filed Apr. 10, 1972, Ser. No. 242,334
Int. Cl. G02b *21/26*
U.S. Cl. 350—90 9 Claims



The invention contemplates a microscope including a stage for supporting a slide for selective positioning in liquid-immersed contact with part of an optical system, such as a field-illuminating condenser element. The arrangement is such that the plane of liquid contact is offset from the adjacent plane of the stage platform and so that selective positioning of the slide cannot result in liquid contact with the stage or with any slide-supporting element.

3,765,746

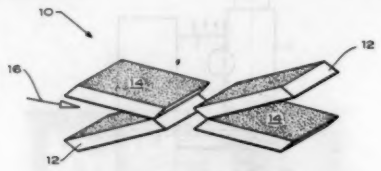
INFRARED GERMANIUM FILM POLARIZER

Edmond J. Ashley; Donald L. Decker, both of Ridgecrest, and Jean M. Bennett, China Lake, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 26, 1971, Ser. No. 166,174
Int. Cl. G02b *5/30*
U.S. Cl. 350—152 1 Claim

An infrared germanium film polarizer based on interference in thin germanium films of different thicknesses inclined to an optic axis at the Brewster angle. The germanium films are evaporated onto a low index of refraction transparent substrate, namely sodium chloride. Four plates of sodium

chloride are in the form of an X to make the path of each ray symmetrical, so the transmitted beam will be undeviated. A well collimated beam of infrared radiation passing through the polarizer will experience interference effects because of the



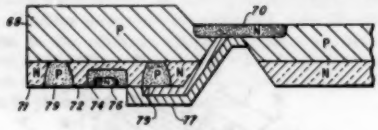
germanium films on the sodium chloride plates. The p polarized light transmitted is diminished only by the reflection losses at the Ge-NaCl interfaces. The s polarized light undergoes interference in the thin Ge films.

3,765,747

LIQUID CRYSTAL DISPLAY USING A MOAT, INTEGRAL DRIVER CIRCUIT AND ELECTRODES FORMED WITHIN A SEMICONDUCTOR SUBSTRATE

John M. Pankratz, and Kenneth E. Bean, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 2, 1971, Ser. No. 168,425
Int. Cl. G02f 1/34
U.S. Cl. 350—160 LC **23 Claims**



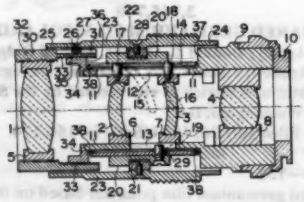
A liquid crystal display device having at least one of the electrodes formed within a semiconductor substrate is provided. Driver circuitry is integral with the substrate and may be formed either on the front or back side thereof. Very accurate spacing of the electrodes for the liquid crystal display is provided by forming a moat in the semiconductor substrate using an orientation dependent etch, the depth of the moat determining the electrode spacing.

3,765,748

MECHANISM FOR RELATIVE ADJUSTMENT OF AXIALLY SPACED LENS COMPONENTS

Hiroshi Mito, Omiya, Japan

Filed Sept. 1, 1972, Ser. No. 285,833
Int. Cl. G02b 7/10
U.S. Cl. 350—187 **6 Claims**



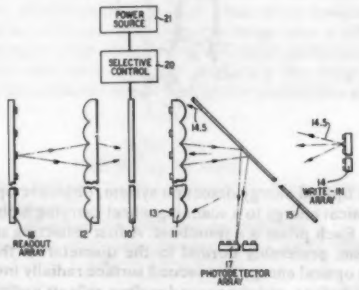
In a lens system in which a basic lens component mounted fixedly on a fixed frame, two lens components movable along the optical axis for changing the magnification, and a lens component movable along the optical axis for focusing are axially spaced, a mechanism for relative adjustment of the axially spaced lens components comprising an operating cylinder fitted on the fixed frame to be axially movable and rotatable about the optical axis, the axial movement of said operating cyiinder moving two lens components for changing the magnification, keeping the focusing lens components immovable relative to the basic lens component, to set the magnification of the lens system, and the rotation of said operating cylinder moving only the focusing lens component, keeping two lens components for changing the magnification immovable relative to the basic lens component, to set the focusing of the lens system.

3,765,749

OPTICAL MEMORY STORAGE AND RETRIEVAL SYSTEM

John Thomas LaMacchia, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 23, 1972, Ser. No. 255,990
Int. Cl. G11c 13/04
U.S. Cl. 350—161 **8 Claims**



An optical memory element capable of recording many pages of information is provided by locating a thermoplastic (heat-deformable) resin memory sheet between a pair of fly's eye lenses. One of these lenses serves the purpose of focusing readout optical radiation incident on a single desired page of the memory sheet, the readout optical radiation coming from one of a plurality of light sources, each of which correspond to a page of the memory sheet. The other fly's eye lens focuses a page of write-in optical radiation onto the corresponding page of the memory element; and this second lens also serves the purpose of focusing the readout optical radiation after propagating through both the memory element and a Schlieren stop located between the memory sheet and this fly's eye lens. An array of optical detectors, onto which the readout beam of optical radiation is focused, reads out a page of information at a time, corresponding to the particular one of the readout optical sources which is energized at that time.

3,765,750

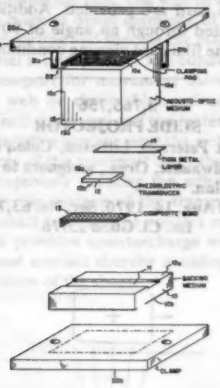
ACOUSTO-OPTIC DEVICE

Charles D. Butter, Eden Prairie, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Nov. 1, 1972, Ser. No. 302,719
Int. Cl. G02f 1/34
U.S. Cl. 350—161 **10 Claims**

Acousto-optic devices having improved bandwidth are

prepared by a simplified process. A thin metal layer is interposed between the piezoelectric transducer and the acousto-



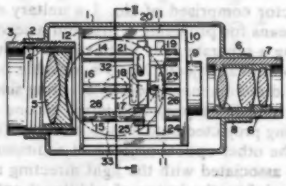
optic medium. Clamping means place the transducer and thin metal layer under compression.

3,765,751

ZOOMING DEVICE FOR ZOOM LENSES

Yoshiro Noguchi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Dec. 21, 1970, Ser. No. 99,832
Claims priority, application Japan, Dec. 22, 1969, 44/121767; Dec. 22, 1969, 44/121768
Int. Cl. G02b 7/02
U.S. Cl. 350—252 7 Claims



A zooming device for zoom lenses is provided with a zooming component and a compensating component which are moved in the optical axis direction to be adjusted, wherein two guide rods are provided on one side in the lens barrel. A zooming component frame formed with a slot at right angles to the optical axis direction is fitted slidably on one of the rods, and a compensating component frame provided with an engage pin is fitted on the other rod. A cam plate provided with a working pin fitted in said slot and a cam slot in which said engage pin fits is pivoted rotatably on the lens barrel by a shaft at right angles to the optical axis and said slot. Therefore, by turning said cam plate, said zooming component frame and said compensating component frame are adjustably moved to change the magnification.

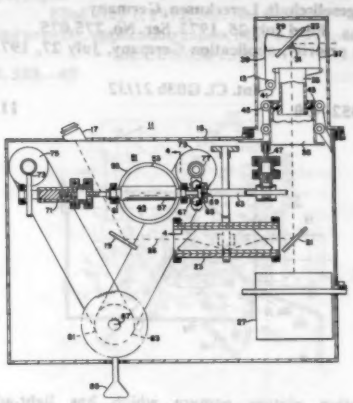
3,765,752

RATE AIDED TARGET ILLUMINATOR

Arthur A. Smith; Dean E. Christensen; Billy H. Campbell; Raymond I. Strickland; Bennie F. Lopez; Herbert P. Eckstein, and Hart S. Litchfield, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 16, 1972, Ser. No. 298,133
Int. Cl. G02b 5/08
U.S. Cl. 350—289 5 Claims

An illuminator of a moving target including a line of sight with a laser beam boresighted therein, mechanisms for simultaneous rate and attitude angular displacements of the line of sight in azimuth and elevation and a joystick operable for nor-



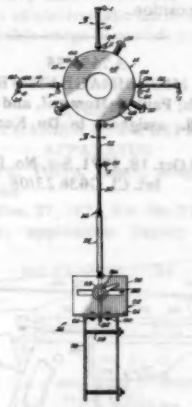
mal directional control of the respective displacements for rate aided tracking illumination of the target.

3,765,753

UNIT OF ORIENTATION FOR PERIPHERAL OPHTHALMOMETRY

Carlos Alberto Zarraga, Esguina Cipresses, Edifico San Andres, Caracas, Venezuela

Filed Feb. 16, 1971, Ser. No. 115,221
Int. Cl. A61b 3/10
U.S. Cl. 351—6 26 Claims



This invention pertains to a mechanical unit which is applied to an optical instrument known as an Ophthalmometer which is used to determine the corneal curvature of the eyes of a patient being fitted with corneal contact lenses, the unit of orientation provides eight luminous orientation points and everytime one of a patient's eyes is focused on one of these points a corneal measurement will be made by the Opthalmometer, the luminous points preferably consist of eight small electric light bulbs, which are adjustable to predetermined locations. Eight readings will have been made on the Ophthalmometer after the eye has been focused sequentially on all eight light bulbs. A control box is provided which includes a selector switch whereby the light bulbs are sequentially illuminated to guide the eye of the patient.

3,765,754

MOTION PICTURE CAMERA

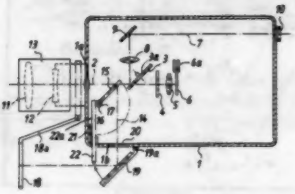
Alfred Winkler, Munich, Germany, assignor to AGFA Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 25, 1972, Ser. No. 275,075

Claims priority, application Germany, July 27, 1971, P 21 37 599.5

Int. Cl. G03b 21/32

U.S. Cl. 352—90 11 Claims



A motion picture camera which has light-admitting openings in the front and bottom walls of its housing. The front opening admits a main light beam which passes through spaced-apart front and rear portions of the picture taking lens. A mirrored rotary shutter can deflect incoming light into a viewfinder or against the photosensitive element of an exposure control. The bottom opening can admit an auxiliary light beam against a first mirror which is movable into and from the path of the main light beam, and a second mirror is mounted on the bottom wall for movement to and from an open position in which it directs the auxiliary light beam against the first mirror. The first mirror is moved into the path of the main light beam in response to movement of the second mirror to the open position. If the first mirror transmits a portion of the main light beam, the foremost film frame can be exposed to light entering by way of both openings when the second mirror assumes its open position.

3,765,755

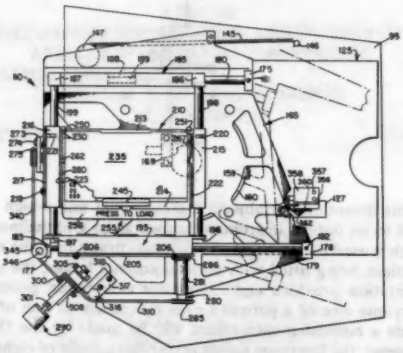
MICROIMAGE VIEWER

Joseph P. Samuels; Paul A. Hummel, and John G. Roff, all of St. Charles, Ill., assignors to Du Kane Corporation, St. Charles, Ill.

Filed Oct. 18, 1971, Ser. No. 190,233

Int. Cl. G03b 23/08

U.S. Cl. 353—27 3 Claims



A viewer in which a light source and lens are utilized for providing a magnified reproduction of a character carried on a film card including a film card holder positioned substantially in a vertical plane and perpendicular to the optical axis of the magnifying lens, the film card holder is movable in the vertical plane between a film card viewing condition and a film card changing condition. Means for focusing the lens and means for scanning the film card are provided. Additionally, the film card may be rotated through an angle of 90° while the film card holder is in the film card viewing condition thereof.

3,765,756

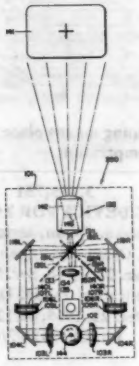
SLIDE PROJECTOR

Dean McCormack Peterson, Littleton, Colo., and Cornelis T. Veenendaal, Milwaukie, Oreg., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1970, Ser. No. 63,751

Int. Cl. G03b 23/16

U.S. Cl. 353—83 4 Claims



A projector comprised of No. 1 a unitary optical system, No. 2 a means for providing a first and a second light beam each having a separate axes that extends through a different one of two optical objects, No. 3 a movable first and second light beam directing means jointly coacting simultaneously to replace by infusion a projected image of one of said optical objects being projected onto a show screen with the projected image of the other optical object and additional light reflecting means associated with the light directing means that are operable to infuse the image of additional optical objects as they are projected onto a preview screen of the projector and before they are projected onto its show screen.

3,765,757

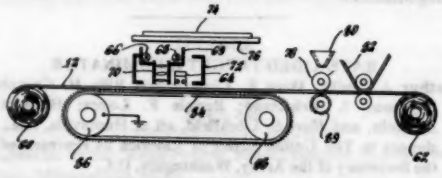
TRANSPORT ARRANGEMENT FOR THIN SHEET MATERIAL

John W. Weigl, Webster, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,613

Int. Cl. G03g 15/00

U.S. Cl. 355—3 10 Claims



A transport arrangement for an elongated relatively thin web or continuous sheet of material comprises a means for transporting the material in contact with an electrically con-

ductive body formed of an electrically conductive mat and a plurality of electrically conductive contact members extending from the mat and which are secured to the mat and are in elecrical contact with the mat. The web or sheet is engaged by the conductive body at distal segments of the contact members thereby supporting and spacing the material from the mat while the material is transported. The conductive body is positioned on a transport for movement therewith and imparts motion to the web or sheet. Alternatively, the conductive body is maintained stationary and the material is drawn across the body. Through this arrangement the web or sheet is spaced from the surfaces of the transport and other support surfaces thereby advantageously resisting the adhesion of a charged web or sheet to the surface of the transport surface. Additionally, the contact between the contact members and transported material provides countercharge with relatively firm, well defined local contact thereby avoiding sparking and attendant degradation of the sheet.

3,765,758

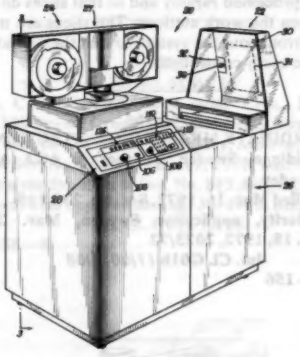
MICRO-IMAGE VIEWER-PRINTER MACHINE OPTICAL ASSEMBLY

Richard W. Jackson, Barrington, and John J. Schulze, Prospect Heights, both of Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed May 5, 1972, Ser. No. 250,615

Int. Cl. G03b *27/76*

U.S. Cl. 355—5 **17 Claims**



A micro-image viewer-printer machine for selectively viewing or reproducing micro-images, particularly those stored on a roll of microfilm, includes a viewing screen for observing projected images from a roll of microfilm and a printing assembly for automatically, rapidly reproducing copies of the images from the roll of microfilm. An optical assembly includes two independent radiation sources, the first source providing illumination to project a micro-image to a viewing screen and the second source providing illumination to project a micro-image to expose sheets of copy material. The two radiation sources are focused at the same focal point and utilize the same optical path through a condenser lens assembly to simulate a single point source of radiation. The optical assembly further includes a shutter assembly to prevent the preexposure or overexposure of sheets of copy material and a mirror assembly to selectively reflect a projected image to the viewing screen or to pass the projected image to a printing assembly of the present machine.

3,765,759

READER PRINTER

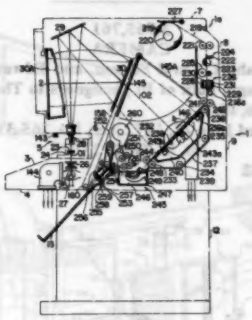
Hiroshi Yamada, Ichikawa, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 1, 1972, Ser. No. 249,029

Claims priority, application Japan, May 6, 1971, 46/30039

Int. Cl. G03b *13/28*

U.S. Cl. 355—45 **9 Claims**



An apparatus comprising a projection lens, a first reflector and a second reflector wherein a frame of desired information of a microfilm or microfiche placed on a predetermined projection position in the apparatus, has its picture projected through the projection lens and first and second reflectors on a screen of the light transmission type to form an enlarged image of the information on it which can be observed from outside the apparatus. When it is desired to make a duplicate of the information on an enlarged scale, the second reflector is withdrawn from the path of light projection and an optical image of the information is transmitted through the projection lens and first reflector to the surface of an electrophotographic photosensitive sheet electrically charged uniformly beforehand to form an electrostatic latent image which is then developed into a visible image to provide a duplicate of the information.

3,765,760

ZOOM MECHANISM FOR A REPRODUCING APPARATUS

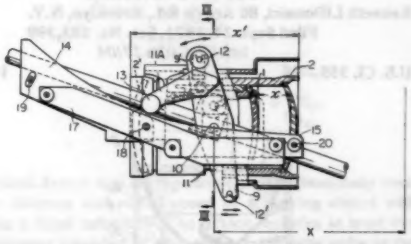
Hideaki Mochimaru, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,919

Claims priority, application Japan, Dec. 26, 1970, 45/118615

Int. Cl. G03b *27/36*

U.S. Cl. 355—58 **3 Claims**



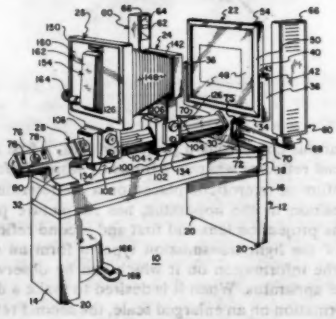
In a zoom mechanism for a reproducing apparatus wherein an original surface and an image formation surface are fixed and zooming is effected by moving a lens system between those surfaces and in which during movement two lenses within the lens system are moved axially relative to each other

by a cam follower means riding on a cam surface, the cam surface is formed by surface portions on two cam plates which have a common pivot point at their adjacent ends so that by adjusting the orientation of each plate with respect to the other about the pivot point, the spacing between the two lenses may be appropriately varied through the action of the cam follower means during movement of the lens system to correct for focus shifting.

3,765,761
CAMERA

Charles J. Leonhart, Carol Stream, and Edward W. Lewandowski, Chicago, both of Ill., assignors to The Nuarc Company, Chicago, Ill.

Filed June 22, 1972, Ser. No. 265,317
Int. Cl. G03b 27/56
U.S. Cl. 355—62 **7 Claims**

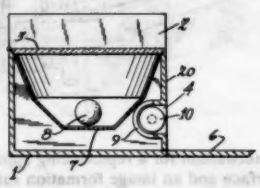


A camera comprising copy support means at one end for holding a copy to be photographed on a first vertical plane, a single elongated support rail extending normal to said first plane toward an opposite end of the camera, a film support means carried entirely by said single rail mounted for movement longitudinally thereon toward and away from said copy support means for holding the film on a second exposure plane parallel of said first copy plane, and lens support means carried entirely by said rail for movement longitudinally thereof between said copy support means and said film support means. Lens means is mounted on said lens support means for movement therewith in continuous coaxial alignment on a horizontal axis parallel of the rail and normal to said first and second planes, said single rail having a diamond-shaped cross section. Said lens means and film supporting means having gears and rollers for coacting with said rail. Also a stop means selectively presses against one of the edges of the rail.

3,765,762
COPYING MACHINE

Kenneth LiDonnici, 80 Argyle Rd., Brooklyn, N.Y.

Filed Sept. 24, 1971, Ser. No. 183,399
Int. Cl. G03b 27/04
U.S. Cl. 355—78 **10 Claims**

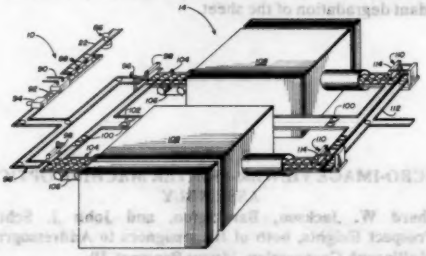


A copying machine has a flat translucent exposure surface to receive an original in pressure contact with an intermediate sheet, for exposure, a double angled light reflector disposed below the exposure surface, a pair of bulbs projecting through opposite side walls of the reflector and a low-mass, low-wattage heater for heating the intermediate sheet in pressure contact with a copy sheet arranged in a recess near a side wall of the reflector.

3,765,763
AUTOMATIC SLICE PROCESSING

James L. Nygaard, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 29, 1969, Ser. No. 845,733
Int. Cl. G03b 27/30
U.S. Cl. 355—100 **17 Claims**

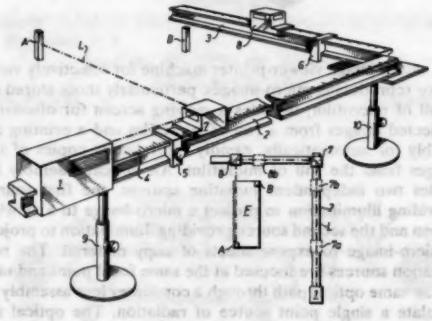


In an electronic component manufacturing system, slices are transported in serial fashion between a plurality of work stations. As the slices move through the system, each work station performs a separate manufacturing operation on each slice. The manufacturing operations are performed in immediate succession and within the same time interval so that the slices are processed rapidly and so that slices do not accumulate between the work stations. The slices are maintained in sequence throughout the system so that the operation of the system is more easily controlled.

3,765,764
COORDINATE MEASURING INSTRUMENT

Erik Niss, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Mar. 16, 1972, Ser. No. 235,118
Claims priority, application Sweden, Mar. 23, 1971, 3780/71; Feb. 18, 1972, 2023/72
Int. Cl. G01b 11/00, 3/08
U.S. Cl. 356—156 **19 Claims**



A measuring device for optical measurement of co-ordinates distance between two or more points. The device includes a light source in the beam direction of which one or

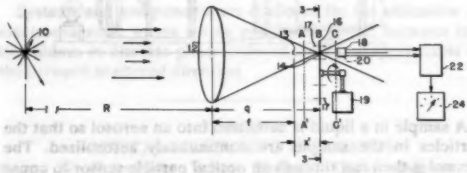
more deflecting means is or are arranged to project the beam deflected onto indicators placed at the measuring points. The deflecting means are movable along a path, or along paths making angles with each other. The distance is directly readable on a measure tape or on an electronic or mechanical meter.

3,765,765

OPTICAL RANGING DEVICE

Murray Hefter, Far Rockaway, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 27, 1971, Ser. No. 212,812
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **4 Claims**



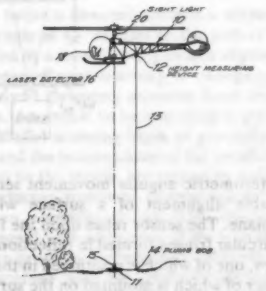
A thin interrupter is moved through the image plane of a converging optical system to interrupt light impinging on a pair of equal size detectors. The output signals from the detectors are used as a measure of the distance between the light source or target and the lens and the optical system.

3,765,766

AERIAL SURVEY

Frederick C. McConnell, 2003 Briar Cres., N.W.; George Jason, 108 Brown Cres., N.W., and Neil J. Armstrong, 5428 Bannerman Dr., N.W., all of Calgary, Alberta, Canada

Division of Ser. No. 65,259, Aug. 19, 1970, Pat. No. 3,709,607, which is a continuation of Ser. No. 817,448, April 18, 1969, abandoned. This application Aug. 30, 1972, Ser. No. 284,971
Int. Cl. G01b *11/26*
U.S. Cl. 356—4 **10 Claims**



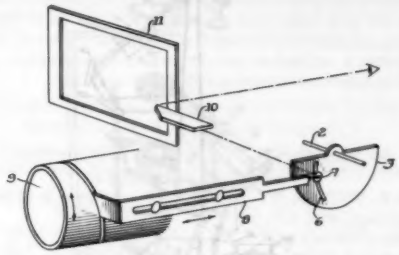
Target positioning apparatus for use in aerial surveying has a viewing device and a laser alignment device for respectively approximately and accurately positioning a helicopter above a predetermined point on a terrain, and a height measuring device and horizontal distance measuring equipment which are automatically operated by the laser beam.

3,765,767

FOCUS ADJUSTING DEVICE FOR CAMERA OR CINE CAMERA

Isono Tadao, Tokyo-to, Japan, assignor to Bell & Howell Japan, Ltd., Tokyo-to, Japan

Filed Mar. 27, 1972, Ser. No. 238,072
Int. Cl. G03b *13/20*
U.S. Cl. 356—8 **11 Claims**



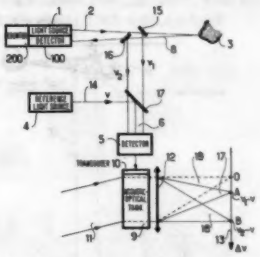
To enable focusing the objective lens of an optical instrument or camera on a remote subject, a mechanism based on the principle of triangulation is provided having a gravity responsive pendulous member actuating a light control relative to a light source which is movable in response to adjustment of the focus of the objective lens. By a light conducting system, the light controlled by relative positions of the pendulous member and the light are coordinated to be visible in the viewfinder whereby the user can determine when the lens is adjusted on the subject.

3,765,768

OPTICAL DEVICE FOR SIMULTANEOUSLY MEASURING THE DISTANCE AND SPEED OF A MOVING OBJECT WITH RESPECT TO A REFERENCE

Jean-Pierre Budin, Paris, and Georges Roger, Saint-Michel-sur-Orge, both of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Mar. 11, 1971, Ser. No. 123,288
Claims priority, application France, Mar. 16, 1970, 7009288
Int. Cl. G01p *3/36*
U.S. Cl. 356—28 **4 Claims**



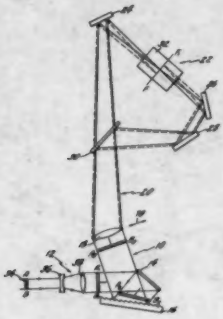
An optical device making it possible to simultaneously measure the distance and radial speed of a moving object with respect to a fixed reference. The device includes at least one laser generator intended to emit at least one light pulse in the direction of said moving object, means to measure the propagation time of said pulse reflected by said moving object, and means for measuring the "Doppler" frequency of said reflected pulse. These spectral analysis means are made up of an acoustic-optical tank arranged in a parallel and monochromatic light beam.

3,765,769

DYNAMIC SPECTROSCOPY OF PICOSECOND PULSES

Edmond B. Treacy, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 26, 1972, Ser. No. 247,652
Int. Cl. G01j 3/40, 3/42, 3/12
U.S. Cl. 356—79 4 Claims



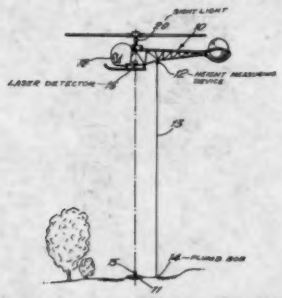
A device for producing a dynamic spectrogram of a picosecond pulse of electromagnetic radiation is described. A technique for recording the component wavelengths and their relative intensity as a function of time for the pulse is also discussed.

3,765,770

AERIAL SURVEY

Frederick C. McConnell; George Jason, and Neil J. Armstrong, all of Calgary, Alberta, Canada, assignors to Spartan Air Services Limited, Ottawa, Ontario, Canada

Division of Ser. No. 65,259, Aug. 19, 1970, Pat. No. 3,709,607, which is a continuation of Ser. No. 817,448, April 18, 1969, abandoned. This application Aug. 25, 1972, Ser. No. 283,791
Int. Cl. G01b 11/26
U.S. Cl. 356—152 8 Claims



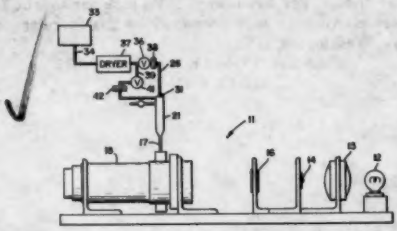
A control and actuating apparatus for use in aerial surveying using a helicopter has first and second concentric arrays of laser beam sensitive cells in a laser beam detector for initiating operation of distance measuring equipment and of an altitude measuring device when the innermost array senses a laser beam and discontinuing the operation when the outermost array senses the laser beam.

3,765,771

LIQUID BORNE PARTICLE SENSING METHOD USING AEROSOLIZING TECHNIQUES

Clyde C. Shaw, Los Altos Hills, Calif., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 846,712, Aug. 1, 1969, abandoned. This application Oct. 27, 1971, Ser. No. 184,271
Int. Cl. G01n 21/26
U.S. Cl. 356—103 11 Claims



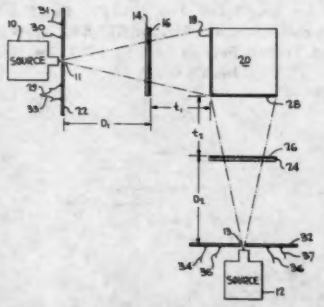
A sample in a liquid is nebulized into an aerosol so that the particles in the sample are continuously aerosolized. The aerosol is then run through an optical particle sensor to count the particles.

3,765,772

INTERFEROMETRIC ANGULAR SENSOR AND REFERENCE

Colin S. Willett, Keedysville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 30, 1972, Ser. No. 267,884
Int. Cl. G01b 9/02
U.S. Cl. 356—110 10 Claims



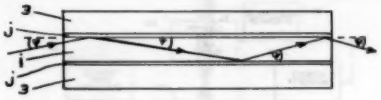
An interferometric angular movement sensor which maintains a stable alignment of a surface with respect to a reference plane. The sensor relies upon the formation of non-localized circular fringes formed in reflection from two reflective surfaces, one of which is positioned in the reference plane and the other of which is mounted on the surface sought to be maintained in angular relationship with said reference plane. The fringes are formed as a result of directing divergent light from a source onto the two reflective surfaces. The position of the fringes on an appropriately located screen detector will indicate whether any misalignment has occurred, and by connecting said detector to appropriate servo-mechanisms, realignment of the two surfaces can be easily maintained to a degree of accuracy heretofore unobtainable.

3,765,773

SYSTEMS AND COMPONENTS FOR THE UTILIZATION OF ELECTROMAGNETIC WAVES IN DISCRETE, PHASE-ORDERED MEDIA

Melvin Milton Weiner, 56 Marcellus Dr., Newton Centre, Mass.

Filed Oct. 5, 1970, Ser. No. 78,056
Int. Cl. G01n 21/40; G01h 9/02
U.S. Cl. 356—114 8 Claims



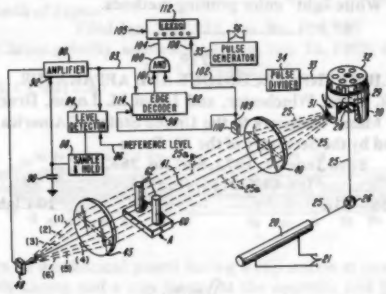
Systems and components are disclosed for the utilization of electromagnetic waves whose phase difference, between lattice planes in discrete phase-ordered media, is appreciable in the forward-scattered direction.

3,765,774

OPTICAL MEASURING APPARATUS

Harry G. Petrohilos, Yellow Springs, Ohio, assignor to Techmet Company, Yellow Springs, Ohio

Filed Jan. 31, 1972, Ser. No. 222,032
Int. Cl. G01b 11/00
U.S. Cl. 356—156 22 Claims



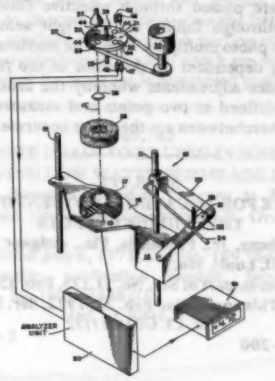
A narrow laser beam is directed towards a mirror which is positioned at an angle of 45° relative to the path of the beam and which is rotated by a motor having an axis aligned with the beam to effect rotary planar scanning or sweeping of a lens constructed to convert the rotary scanning beam into a parallel scanning beam. An article to be measured is positioned in the path of the parallel scanning beam at generally the focal point of the lens, and the interruptions of the parallel scanning beam, as produced by the article, are sensed by a photodetector. The photodetector transmits corresponding pulses or signals through an amplifier to an edge decoder which receives a reset signal with each pass of the scanning beam. The edge decoder provides for selecting different combinations of signals received from the amplifier and controls the counting of constant pulses received by a counter from a high frequency generator or clock so that the counted pulses correspond to the dimension of the article at the plane of the parallel scanning beam. Preferably, the motor which rotates the scanning mirror is supplied with power from the clock through an adjustable frequency divider, and the amplified signals from the photodetector are compared with a reference level to provide an automatic gain control for the amplifier.

3,765,775

OPTICAL INTERNAL QUALITY ANALYZER

Eugene R. Ganssle, Silver Spring, and Donald R. Webster, Laurel, both of Md., assignors to Neotec Corporation, Rockville, Md.

Filed Mar. 15, 1972, Ser. No. 234,843
Int. Cl. G01j 3/48; G01n 21/22; G01j 21/48
U.S. Cl. 356—188 13 Claims



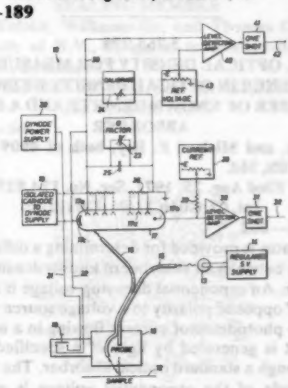
A system for measuring the optical density of an object in which the object is illuminated with light of different wavelengths in a continuous sequence. The level of light transmitted through or, alternatively, reflected by the object during each illumination is measured by means of a photodetector. The photodetector output for each wavelength is converted in an analyzer unit to a measurement of transmissive or reflective optical density. The analyzer unit is controlled by selected synchronization signals which are generated during illumination and correspond to the illumination sequence. The analyzer unit samples and stores values of optical density at a pair of wavelengths corresponding to the synchronization signals and produces a digital output representing either absolute optical density at one of the wavelengths or the difference between the optical densities at the pair of wavelengths.

3,765,776

CALIBRATED DENSITOMETER ACCOMMODATING VARIOUS COLOR TONES

Frank R. Bravenec, 2518 S. Blvd., Houston, Tex.

Continuation-in-part of Ser. No. 826,788, May 22, 1969, abandoned. This application Feb. 22, 1971, Ser. No. 117,354
Int. Cl. G01j 3/48; G01n 21/48
U.S. Cl. 356—189 24 Claims



A densitometer circuit uses a photo-multiplier tube to measure light levels. The tube is provided with an independent and

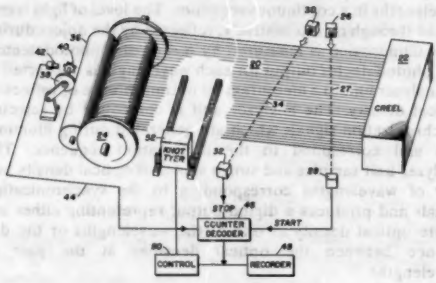
preferably non-variant power supply connected between the cathode and first dynode. All other dynodes and anodes are powered by an RC decay circuit. Closure of a switch charges the RC circuit which consequently powers the photomultiplier tube. The tube compresses the signal in a manner yielding a logarithmic output signal.

As an alternative embodiment, the densitometer circuit is adapted for use with several color tones wherein the various color tones are passed through selective filters with light passing therethrough falling on the light sensitive device, preferably the photo multiplier tube. The maximum amount of light will vary dependent on the color of the filter. The apparatus provides adjustments whereby the sensitivity of the apparatus is defined at two points and measurements at all other points therebetween are therefore accurate.

3,765,777
DEVICE FOR LOCATING AND IDENTIFYING THREADLINE DEFECTS

Louis B. Williams, Jr., Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 11,173, Feb. 13, 1970, abandoned. This application Feb. 22, 1972, Ser. No. 227,969
Int. Cl. G01n *21/32*
U.S. Cl. 356—200 **10 Claims**



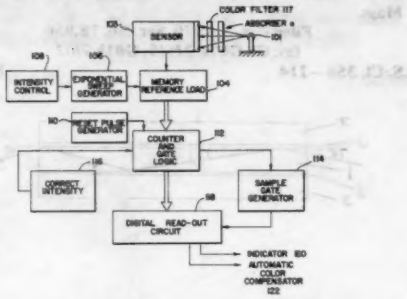
A moving warp sheet is optically monitored by two lights beams in the plane of the sheet, with light-responsive transducers located to receive the beams. The beams cross the sheet along imaginary lines which intersect outside the sheet. The defective threadline is identified by the time interval between actuations of the transducers by a flaw.

3,765,778
DIGITAL OPTICAL DENSITY FOR MEASURING THE DIFFERENCE IN OPTICAL DENSITY BETWEEN AN ABSORBER OF KNOWN DENSITY AND A SAMPLE ABSORBER

Paul P. Bey, and Michael P. Bey, both of 4909 Abbott Dr., Temple Hills, Md.

Filed Aug. 25, 1971, Ser. No. 174,827
Int. Cl. G01n *21/06*; G01j *3/46*
U.S. Cl. 356—202 **7 Claims**

An apparatus is provided for determining a difference in optical density between an absorber of known density and a sample absorber. An exponential decaying voltage is connected in series but of opposite polarity to a voltage source which is proportional to photodetector current flowing in a memory load. The current is generated by light of a specified wavelength passing through a standard optical absorber. The instant when the magnitude of the exponential voltage is equal to that generated by the photodetector, i.e., when the voltage across the combination is zero, the memory load is adjusted so that a specified number of clock pulses, N_s, (fixed by the clock frequency and the time constant of the exponential voltage) are counted by a ripple counter. A sample of unknown optical density at a specified wavelength is then measured, providing



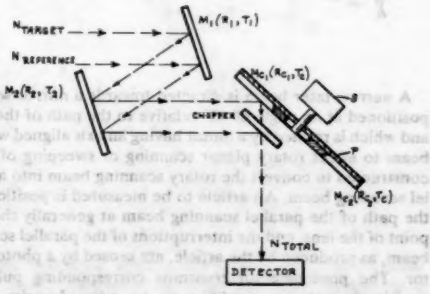
a voltage proportional to a selected calibrated memory standard. At the instant of time when this voltage, in combination with the exponential voltage is equal to zero, the difference in the optical density between the unknown and standard absorbers is equal to the absolute value of the difference between the reference count N_s and the count in the ripple counter. The density information is gated into a decade counter and read out digitally.

Circuitry is provided for indicating positive or negative difference in density, and a reset automatically recycles the device at the end of a measurement. The density difference measurement is not affected by absolute light intensity or absolute photodetector sensitivity. This device is particularly useful in "White light" color printing methods.

3,765,779
CALIBRATION TECHNIQUE AND APPARATUS

Graham R. Hunt, Winchester, and Lloyd M. Logan, Dracut, both of Mass., assignors to the United States of America as represented by the Secretary of the Air Force

Filed June 27, 1972, Ser. No. 266,786
Int. Cl. G01j *5/48, 1/56*
U.S. Cl. 356—216 **10 Claims**



A technique or method and apparatus utilizing energy available from metal mirrors having different emissivities as a calibration source for radiometers that determine absolute radiance of low energy, infrared targets near and below ambient temperatures. By the changing of a mirror in the optical train with one of different reflectivity, the relationship between reflectivity and emissivity enables the calculation of the number of photons in the field of view of a detector for each mirror such that the altering of the photon flux in a predictable manner by the change of mirrors enables calibration.

3,765,780

WRITING IMPLEMENTS

Biing-Yan Guu, 108 Min Chuan West Road, and Hsin-Ching Liu, 166 Section 2, Chung King North Road, both of Taipei, Taiwan, China

Filed June 19, 1972, Ser. No. 264,170
Int. Cl. B43k 27/02
U.S. Cl. 401—17 7 Claims

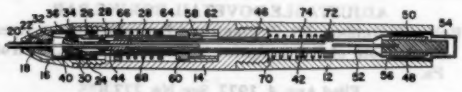
Combination of ball point pen at one end of an elongated body and sharpened lead pencil at another end, the lead being in sharpened cartridge form storable in the body.

3,765,781

MECHANICAL PENCIL

Yasuyuki Hashimoto, Nishinomiya City; Osamu Torii, and Sugako Torii, both of Kyoto, all of Japan, assignors to Mitsubishi Pencil Co., Ltd., Tokyo and Ancos Co., Ltd., Osaka, both of Japan

Filed Jan. 22, 1971, Ser. No. 108,785
Claims priority, application Japan, Jan. 24, 1970, 45/6669
Int. Cl. B43k 21/16
U.S. Cl. 401—67 5 Claims



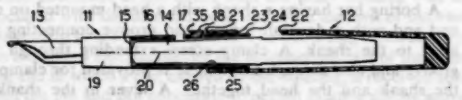
In an mechanical pencil having a cap nozzle at one end of a body casing and a cap means at the opposite end thereof, a lead carrying mechanism is retractably arranged within the cap nozzle and selectively operated by a mechanism operative with resilient means provided in the body casing so that in accordance with wear of the lead said lead carrying mechanism is gradually retracted into the body casing under the writing pressure.

3,765,782

ASSEMBLY DEVICE FOR THE BODY AND END SECTION OF A FOUNTAIN PEN

Eugene Defores, Nantes, France, assignor to Societe Dite: Societe Le Foyer, Paris, France

Filed Mar. 27, 1972, Ser. No. 238,037
Claims priority, application France, July 22, 1971, 7126867
Int. Cl. B43k 5/00
U.S. Cl. 401—251 3 Claims



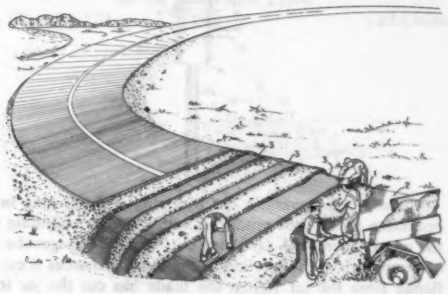
A fountain pen of the type having a forward section carrying a point and adapted to be joined to a cartridge and a body which is adapted to receive the cartridge. The forward section includes a skirt formed of resilient material with a protuberance thereon and is adapted to be received in the interior of the body. In assembly, which is effected by relative longitudinal displacement of the body and forward section, the portion of the forward section carrying the protuberance is displaced laterally towards the axis of the pen into engagement with the cartridge which returns the portion carrying the protuberance to its normal position when the latter is in alignment with an aperture of the body. A portion of the forward section may carry indicia or the like which are visible through the aperture when the parts are in assembled position.

3,765,783

COMPOSITE DRAIN TO BE USED IN SOIL TYPES HAVING LOW WATER PERMEABILITY

Oleg Wager, Bromma, Sweden, assignor to Perstorp AB, Perstorp and Orebro Pappersbruks AB, Orebro, both of Sweden

Filed July 6, 1971, Ser. No. 159,764
Claims priority, application Sweden, July 10, 1970, 9649/70; Feb. 26, 1971, 2446/71
Int. Cl. E01f 5/00
U.S. Cl. 404—2 3 Claims



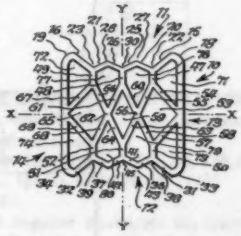
Embankments for roads, railways etc are made by using material having low water permeability, such as clay. The material is laid up in different layers, which are separated from each other by means of horizontally arranged strips of drains. The drains comprise an inner core having wave-shaped surfaces and outer sheets of water filtering material, so that water from the clay may go through the outer sheets into the space between the inner core and the outer sheets and flow out.

3,765,784

SEALING MEMBER

Stewart C. Watson, Williamsville, and Thomas C. Bowman, Buffalo, both of N.Y., assignors to Watson-Bowman Associates, Inc., Buffalo, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,020
Int. Cl. E01c 11/10
U.S. Cl. 404—64 8 Claims



A resilient sealing member, for use in an expansion joint, comprising serrated or dentate top and bottom walls and op-

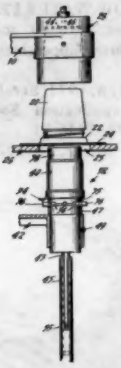
posite side walls forming a hollow strip. An internal reinforcing network is provided in the hollow strip and comprises a plurality of web sections defining spaces therebetween into which the web sections may collapse when the side walls of the strip are pressed toward each other.

3,765,785

METHOD AND APPARATUS FOR TRIMMING AND FINISHING PLASTIC JARS

Robert Lee Humphreys, Saint Charles, and James Edward Spitzer, North Aurora, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 30, 1971, Ser. No. 176,151
Int. Cl. B23b *35/00*
U.S. Cl. 408—1 **3 Claims**



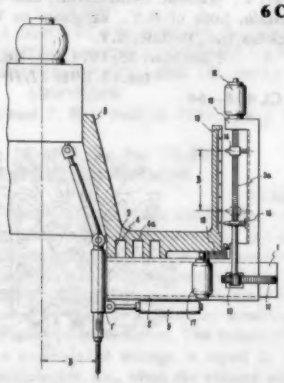
Method and apparatus for trimming and finishing in one operation plastic jars produced with a flange extending from the mouth thereof. A revolving cutter blade engages the edge of the mouth of the jar, and as the blade advances it cuts the flange from the jar. When the blade has cut the jar to the desired length, a gauge stops the blade's advance allowing it to finish the sealing surface of the jar. The stringy scrap is guided into stationary chip breakers which reduce the scrap into smaller pieces.

3,765,786

ADJUSTING DEVICE FOR MULTIPLE SPINDLE BORING HEADS

Otto Oeckl, Tizianstrasse 60, Munich, Germany

Filed Sept. 28, 1971, Ser. No. 184,415
Claims priority, application Germany, Sept. 30, 1970, P 20 47 991.8
Int. Cl. B23b *29/20, 39/34*
U.S. Cl. 408—46 **6 Claims**



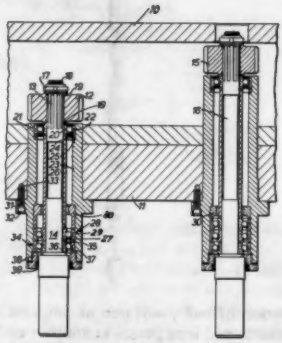
A multiple-spindle boring head has spindle supports which are independently adjustable both annularly and diametrically on a frame and over overlapping areas.

3,765,787

MULTI-SPINDLE MACHINE TOOL HEADS

Raymond Hart, Northwood, and Kenneth Charles Sandell, Leigh-on-Sea, both of England, assignors to Firth Machine Tools (International) Limited, London, England

Filed Nov. 4, 1969, Ser. No. 873,925
Claims priority, application Great Britain, Nov. 8, 1968, 52,938/68
Int. Cl. B23b *39/16*
U.S. Cl. 408—53 **6 Claims**



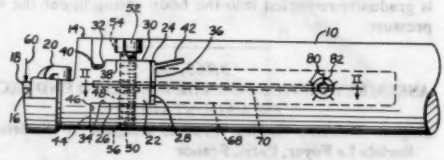
A multi-spindle drilling or reaming unit has a plurality of spindles which are individually removable and replaceable. Hitherto, damage to one spindle necessitated complete replacement of the whole unit. Each spindle has angular contact thrust-accommodating bearings (or other bearings capable of sharing thrust loads) and means, for example a sleeve are provided for locking the inner or outer race of each bearing when the associated spindle is secured in its bore by a retaining flange and bolts.

3,765,788

ADJUSTABLE DOVETAIL BORING BAR

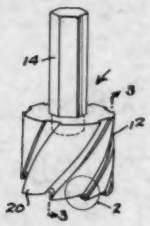
Robert S. Gulibon, Mt. Pleasant, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Aug. 4, 1972, Ser. No. 277,875
Int. Cl. B23b *29/034*
U.S. Cl. 408—181 **10 Claims**



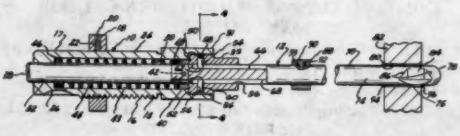
A boring bar having a shank with a head mounted on one end and with a dovetail tongue and groove connecting the head to the shank. A clamp screw extending through the groove and also through the tongue is provided for clamping the shank and the head together. A lever in the shank is pivoted on the clamp screw and engages the head and is pivotal on the clamp screw to adjust the head laterally on the shank.

3,765,789
ANNULAR HOLE CUTTER
Everett D. Hougen, G-5072 Corunna Road, Flushing, Mich.
Filed Dec. 29, 1971, Ser. No. 213,430
Int. Cl. B23b 51/04
U.S. Cl. 408—204 39 Claims



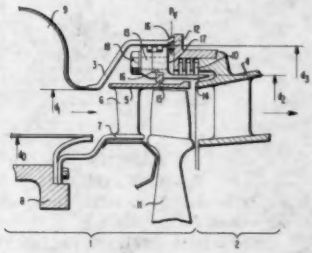
An annular hole cutter having a plurality of teeth spaced circumferentially around the lower end thereof. Each cutting edge has a radially inner portion and a radially outer portion. The two portions of the cutting edges are preferably spaced apart vertically and circumferentially and disposed such as to form positive side rake angles relative to the inner and outer peripheries of the cutter. Each tooth has associated therewith an inner gullet and an outer gullet designed to permit the free passage of chips upwardly away from the two portions of the cutting edges.

3,765,790
TOOL HOLDER
Louis A. Kubicek, Ypsilanti, Mich., assignor to Burr-Ban Tool Service Company, Detroit, Mich.
Continuation-in-part of Ser. No. 887,059, Dec. 22, 1969, Pat. No. 3,658,435. This application Nov. 22, 1971, Ser. No. 200,865
Int. Cl. B23b 51/16
U.S. Cl. 408—226 16 Claims



A tool holder having a cylindrical housing adapted to be inserted into a chuck of a rotating drive machine. The tool holder housing has a radially enlarged intermediate bore opening to the opposite ends of the housing through forward and rearwardly located aligned bores which, in turn, slidably support the shank portion of a deburring tool in such a manner that the deburring tool is adapted to rotate about the longitudinal axis of the tool holder when the same is rotated by the rotary drive machine. A coil spring disposed within the intermediate housing bore has one end bearing against the housing and the other end bearing against a collet carried by the deburring tool shank to bias the deburring tool outwardly while abutment of the collet with the inner housing wall associated with the forward bore limits the amount of outward movement of the deburring tool. The deburring tool shank has an elongated slot paralleling the longitudinal axis of the housing and in which a pin, carried by the housing, is received such that the pin and slot cooperate to permit relative sliding movement between the tool and the housing along the longitudinal axis of the housing while precluding relative rotation between the deburring tool and the tool holder housing as the same is rotated by the drive machine. During the feed-in mode of the machine for the deburring of holes previously drilled, the coil spring functions to maintain the deburring tool outwardly so that the same may perform a deburring operation, while providing means for adjusting the extent of deburring formed on the leading edge of the hole as well as permitting the tool to be retracted along the longitudinal axis of the tool holder housing in the event the deburring tool engages an unfinished hole resulting from a prior drill breakage, to thereby prevent the deburring tool from being forced into an unfinished hole and broken.

3,765,791
TURBINE NOZZLE SUPPORT
Klaus Trappmann, Munich-Karlsfeld, Germany, assignor to Motoren-Und Turbinen-Union GmbH, Munich, Germany
Filed Nov. 8, 1971, Ser. No. 196,656
Claims priority, application Germany, Nov. 7, 1970, P 20 54 926.2
Int. Cl. F10l 25/26, 25/00
U.S. Cl. 415—131 22 Claims

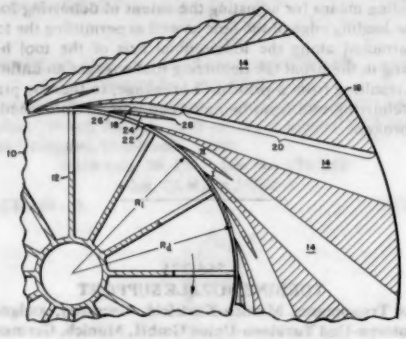


A mounting support of a turbine nozzle, especially of a turbine guide-vane ring connected to a hot gas scroll in the end section of a turbo assembly, which is axially elastically connected at this end section to another adjacent assembly by way of a plug-type connection; the guide-vane ring is thereby rigidly connected at its inner shroud with a housing of the turbo assembly whereas it is axially movably held with its outer shroud in a collar of the gas duct which is itself supported at the adjacent assembly; the outer shroud thereby forms together with an annular piston a structural unit whose end surface facing upstream is acted upon by the gas pressure prevailing upstream of the guide-vane ring whereas its end surface facing downstream is acted upon in part by a high compressor end-pressure and in part by the pressure prevailing downstream of the turbine.

3,765,792
CHANNEL DIFFUSER WITH SPLITTER VANES
John T. Exley, West Haven, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Mar. 27, 1972, Ser. No. 238,184
Int. Cl. F04d 29/44, 21/00
U.S. Cl. 415—181 2 Claims

A centrifugal impeller discharges supersonic flow into a channel diffuser having a plurality of passages of rectangular cross section with leading edges closely adjacent the periphery of the impeller. A series of splitter vanes in the passage inlets

have leading edges closely adjacent the periphery of the impeller and divide the inlet region into two separate passages



through which the supersonic flow is shocked down to a subsonic level with an efficient pressure increase.

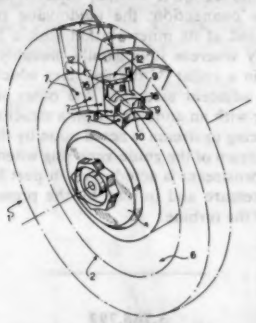
ERRATUM

For Class 416—1 see:
Patent No. 3,765,124

3,765,793
TURBINE ROTORS

Giovanni F. Savonuzzi, Moncalieri, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed July 26, 1971, Ser. No. 166,378
Claims priority, application Italy, July 27, 1970, 69582 A/70
Int. Cl. F01d 5/08
U.S. Cl. 416—96 2 Claims

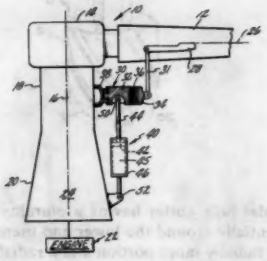


A turbine rotor is described, particularly for motor vehicle gas turbines, in which a number of identical blade root portions, each formed integrally with a respective turbine blade, are secured, for example by welding, to a central rotor disc, the adjoining outer faces of the root portions forming two substantially continous annular faces, minimising drag on the rotor when in use.

3,765,794
HELICOPTER BLADE PITCH LOCK

George Kudasch, Milford, and Karl H. Wallischeck, Fairfield, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 18, 1972, Ser. No. 227,395
Int. Cl. B64c 27/50
U.S. Cl. 416—143 17 Claims

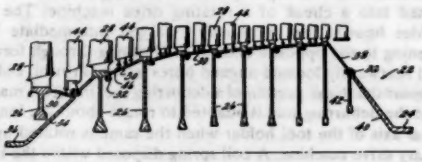


A helicopter blade pitch lock in which the movable and stationary portions of the pitch change servos carry over-lapping concentric sleeve members with aligned apertures therein to receive pitch lock pins equidistant on opposite sides of the servo-axis. There is a sequencing arrangement wherein the unlocked pitch lock pins are locked out of pitch lock position, and wherein the pins can sequentially be freed for pitch locking when desired, actuated to their pitch lock position, and locked in their pitch locked position when pitch locking is desired, and wherein the pins can sequentially be freed in their pitch lock position, withdrawn from their pitch lock position, and locked out of their pitch lock position when pitch lock is not desired.

3,765,795
COMPOSITELY FORMED ROTORS AND THEIR MANUFACTURE

Bernard L. Koff, Cincinnati, Ohio, assignor to General Electric Company, Lynn, Mass.

Division of Ser. No. 33,437, April 30, 1970, Pat. No. 3,688,371. This application July 17, 1972, Ser. No. 272,124
Int. Cl. F03b 3/12, 15/20
U.S. Cl. 416—198 A 4 Claims



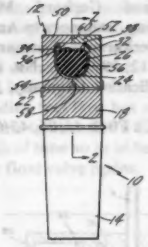
The present disclosure is of a disc type compressor rotor. One disc has an integral annular spacer with an inwardly projecting radial flange which is bolted to a flange projecting inwardly from the rim of an adjacent disc. The flanges are clamped together by bolts which also provide positive locating means for preventing relative radial shifting between the connected discs. A method for forming rotors with this positive locating function is also described.

3,765,796

FILAMENT REINFORCED ROTOR ASSEMBLY

Hans Stargardter, Bloomfield; Siddiq A. Sattar, Bolton, and Walter Pilpel, West Hartford, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed May 1, 1972, Ser. No. 249,283
Int. Cl. F01d 5/30
U.S. Cl. 416—244 3 Claims



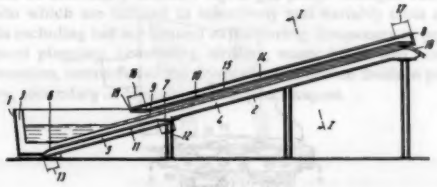
This invention relates to a rotor assembly reinforced with a filament wound composite ring. The rotor assembly comprises a rotatable member having an annular cavity concentric to the member's axis. The composite ring is positioned within the cavity and has an inner diameter somewhat larger than the diameter of the rotor surface about which the ring is disposed. During rotor operation the rotor surface diameter increases and comes into centrifugal load bearing relationship to the composite ring, whereupon the ring carries a portion of the centrifugal loads thus reducing the strength requirement of the rotatable member.

3,765,797

IMPROVED ELECTROMAGNETIC CONVEYOR TROUGH

Axel Von Starcke, Remscheid-Luttring-Hausen; Surwolf Husmann; Hans-Erwin Gerbig, both of Remscheid, and Friedrich Schnake, Rhein-Hausen, all of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Apr. 6, 1972, Ser. No. 241,566
Claims priority, application Germany, Apr. 10, 1971, P 21 17 695.4
Int. Cl. H02k 45/00
U.S. Cl. 417—50 5 Claims



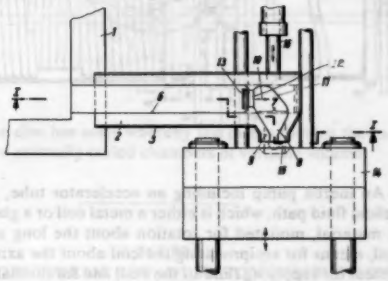
An electromagnetic conveyor and method of operating it whereby a first inductor extends from a position below a liquid metal reservoir to a position beneath a chute ascending obliquely from the reservoir and a second inductor extends above the chute overlapping the first to the end of the chute. The field intensity of the overhead inductor is preferably adjusted to a fixed level sufficient to deliver liquid metal conveyed by the first inductor, and the fields intensity of the first inductor varied to control discharge.

3,765,798

ELECTROMAGNETIC CONVEYOR TROUGH FOR CONVEYING LIQUID METALS

Axel Von Starck; Surwolf Husmann, both of Remscheid, and Hans Erwin Gerbig, Huckeswagen-Wiehagen, all of Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed June 5, 1972, Ser. No. 259,675
Claims priority, application Germany, June 23, 1971, P 21 31 121.7
Int. Cl. H02r 45/00
U.S. Cl. 417—50 5 Claims



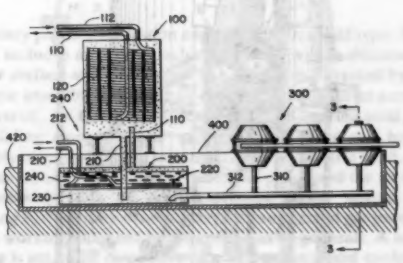
An electromagnetic conveyor of the type having a trough body ascending obliquely from a liquid metal storage vessel and an associated travelling field inductor for producing a field which causes liquid metal in the vessel to be conveyed upward to a pouring spout. In the embodiment described below, a side wall of the body has an opening near the upper end of the body from which a delivery channel extends at an angle to the trough direction. The trough body is also preferably provided with a flow restricting orifice having a mean cross sectional dimension of no more than 80 percent and preferably not more than 75 percent of the mean trough body width in the same direction and also an obliquely extending terminal wall for deflecting the upwardly moving liquid metal stream to the delivery channel.

3,765,799

THERMAL-GRAVITY FLUID PUMPING METHOD AND APPARATUS

Albert C. Ledner, 5328 Bellaire Dr., New Orleans, La.

Filed May 1, 1972, Ser. No. 249,032
Int. Cl. F04b 35/02; F03g 3/00
U.S. Cl. 417—53 9 Claims



A large volume pumping method and apparatus comprising an economical thermal-gravity pumping system which is nonpolluting, and employs relatively free and limitless, generally available, sources of energy input. The invention is particularly useful in pumping water into a tank reservoir for the ultimate purpose of generating hydroelectric power by conventional turbine-operated generator.

3,765,800

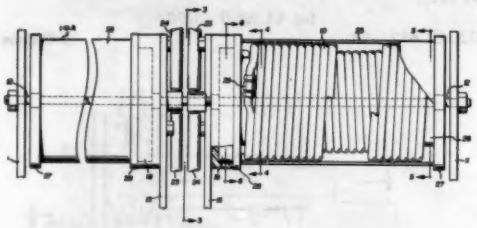
INERTIA PUMP FOR LIQUIDS

James B. Foote, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 112,572, Feb. 4, 1971. This application Feb. 18, 1972, Ser. No. 227,374

Int. Cl. F04f 7/02

U.S. Cl. 417—241 1 Claim



An inertia pump including an accelerator tube, forming a helical fluid path, which is either a metal coil or a glass-ceramic material, mounted for rotation about the long axis of the coil, means for reciprocating the coil about the axis, a piping system for supplying fluid to the coil, and for discharging fluid from the coil. A valve assembly inserted into the piping system includes a pair of inlet and outlet check valves for converting a reciprocating flow into a unidirectional flow. A fluid is entrapped within the helical coil which, due to its inertia, generates a pressure when the accelerator-tube is oscillated. This alternating pressure is converted to one direction flow and is utilized to pump fluid through the piping system external to the accelerator-tube. The preferred device has a double set of accelerator-tubes on a common shaft.

The denser the entrapped fluid, the higher the pump pressure.

The accelerator tube is made from a glass ceramic in one embodiment.

3,765,801

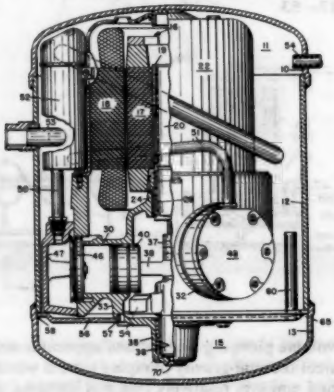
COMPRESSOR LIQUID RETURN PROTECTION

Robert W. Ayling, Bristol, Va., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 14, 1972, Ser. No. 244,212

Int. Cl. F04b 39/14

U.S. Cl. 417—372 1 Claim



For restraining the flow of refrigerant liquid into the oil sump of a refrigerant compressor, a partition extends across the interior of the compressor in contact with the crankcase of the latter, above the sump. The partition has upwardly extending standpipes for permitting the flow of gas from the sump, and has small oil drain holes. Heat from the crankcase and the cylinders of the compressor evaporates refrigerant liquid which has accumulated on the partition.

3,765,802

FEED AND PROPORTIONING PUMP

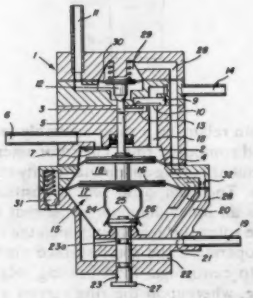
Wulf Leitermann, and Gerhard Maurhoff, both of Wecka1sulm, Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm, Germany

Filed July 12, 1971, Ser. No. 161,529

Claims priority, application Germany, July 14, 1970, P 20 34 816.7

Int. Cl. F04b 43/06, 45/04

U.S. Cl. 417—395 4 Claims



A feed and proportioning pump is provided for delivering two different liquids in a given proportion by flow volume, and in particular to a pump for delivering fuel and oil to mixture-lubricated combustion engines, having two interconnected displacement members executing their suction strokes and their feed strokes simultaneously and arranged in special working chambers communicating with a suction and a delivery line by way of reciprocally acting check valves.

3,765,803

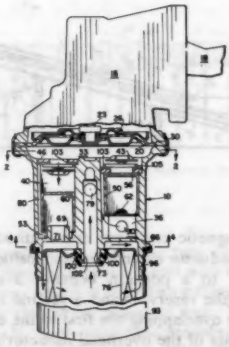
AIR DOME CONSTRUCTION FOR PRESSURE VENTING FUEL PUMPS

Russell Parrent, Fairfield, Ill., assignor to Airtex Products Div., United Industrial Syndicate, New York, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,426

Int. Cl. F04b 11/00

U.S. Cl. 417—540 8 Claims



In bleed back or vent type fuel pumps pressure in the flow line from the pump to the carburetor is relieved when the en-

gine is not operating. Such vents, however, cause loss of pump outlet pressure, so called shut off pressure, when the engine is operating but the pump, although under power, is delivering no fuel because the carburetor is full and the float valve is closed. An air dome construction is provided to prevent air in the air dome from leaking into the fuel in the pump during this time of pump shut off while the engine is running. Air in the fuel is avoided which otherwise would be circulated inside the pump resulting in delay in building up pressure when the carburetor requires more fuel. The air dome also maintains a suitable pressure at the pump outlet during such periods of shut off. These advantages are brought about by providing an air dome having a passageway which rises from the fuel chamber into the air dome beyond the open end and prevents air in the dome from leaking back into the fuel when the pump is not actually providing fuel flow but permits the air pressure built up in the air dome to maintain a high shut off pressure for a considerable length of time so as to be immediately available when the carburetor float valve opens.

3,765,804

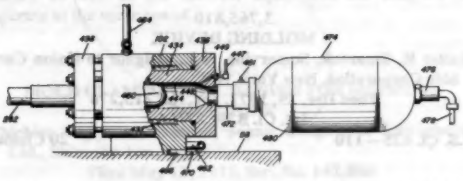
APPARATUS FOR PRODUCING VARIABLE HIGH FREQUENCY VIBRATIONS IN A LIQUID MEDIUM

Clarence W. Brandon, Tulsa, Okla., assignor to Orpha B. Brandon, Tulsa, Okla.; N. A. Hardin; Catherine H. Newton and Hazel H. Wright, Forsyth, Ga., part interest to each

Continuation-in-part of Ser. No. 665,995, June 17, 1957, Pat. No. 3,302,720, which is a continuation-in-part of Ser. No. 296,038, June 27, 1952, Pat. No. 2,866,509, which is a continuation-in-part of Ser. No. 241,647, Aug. 13, 1951, Pat. No. 2,796,129. This application Jan. 23, 1967, Ser. No. 611,082

Int. Cl. F04b *11/00*; F04f *7/00*; F04b *21/04*

U.S. Cl. 417—540 **10 Claims**



Apparatus and methods to form and utilize pulsating fluid pressures in oil well formation treating of producing wells or as a part of secondary or tertiary recovery processes. Self induced or artificially induced liquid-gas phase changes occur in-situ which are utilized to selectively and variably treat oil wells including but not limited to fracturing, temporary or permanent plugging, cementing, drilling, water block and cone prevention, control over the driving and/or driven fluids in primary, secondary or tertiary recovery techniques.

3,765,805

POSITIVE DISPLACEMENT PUMP

Lajos Juhasz, Hatvan, Hungary, assignor to Konzerv-Es Paprikaipari Kutatointezet, Budapest, Hungary

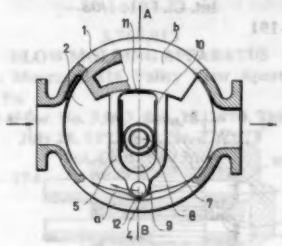
Filed July 7, 1971, Ser. No. 160,437

Claims priority, application Hungary, July 23, 1970, KO-2355

Int. Cl. F01c *1/00*; F04c *21/00*

U.S. Cl. 418—68 **9 Claims**

A positive displacement double-acting piston pump wherein a shaft drives a disc to which is pivotally secured a piston. The piston is connected to the pump casing, and on rotation of the disc oscillations of variable eccentricity are carried out by the



piston. The disc has seals whereby the piston divides the casing into two mutually sealed chambers of variable volume.

3,765,806

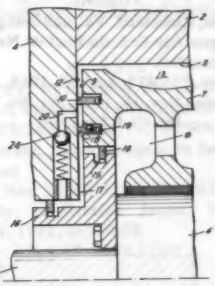
TROCHOID TYPE OF ROTARY PISTON COMBUSTION ENGINE

Willi Gutbrod, Heinsheim, Germany, assignor to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm and Wankel GmbH, Lindau/Bodensee, Germany

Filed Mar. 23, 1972, Ser. No. 237,479

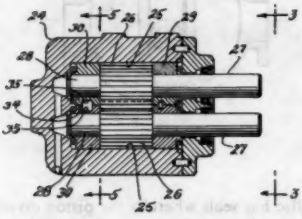
Int. Cl. F01c *19/00*; F04c *15/00*, *27/00*

U.S. Cl. 418—91 **2 Claims**



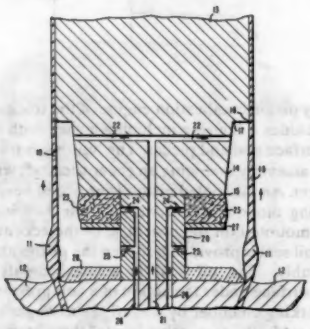
A rotary piston combustion engine of the trochoid type. The engine includes a housing including a shell with multiarcuate interior surface and end pieces. The housing is traversed by an eccentric assembly including an eccentric shaft with an eccentric thereon. An oil cooled piston is provided bearing axial gas seals sliding along the end walls of the housing and being rotatably mounted on the eccentric of the eccentric shaft. At least one oil seal is provided between the piston and the eccentric assembly. The oil seal is pressed tightly against its matching surface under the action of a compressed gas passing from a working chamber by way of the axial gas seals. A sealing ring is set in the respective face of the piston and encloses the oil seals and is in sealing contact with the adjoining end wall of the housing. The sealing ring is spanned by a passage extending from a region of the adjacent end wall of the housing radially internal to the inner envelope curve of the axial gas seals and radially external to the outer envelope curve of the sealing ring. The passage is fitted with a check valve that clears the passage only when a higher pressure prevails radially outside the sealing ring than radially within the same.

3,765,807
DUMP TRUCK PUMP
Arthur B. Joyce, Corinth, Miss., assignor to Tyrone Hydraulics, Inc., Corinth, Miss.
Filed Oct. 1, 1971, Ser. No. 185,709
Int. Cl. F01c 1/08
U.S. Cl. 418—191 **1 Claim**



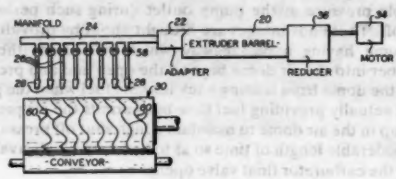
A dump truck pump is disclosed incorporating a hydraulic gear pump adapted to be controllably connected to the truck engine and further incorporating control valve means including a reciprocable piston type valve assembly working in a bore and provided with a cable type actuating element enclosed within a sheath and having means directly connecting the sheath to the body of the pump which means completely closes the valve bore and thus prevents exposure of the valve and bore to the elements. The other end of the valve bore is also enclosed and protected.

3,765,808
APPARATUS FOR EXTRUDING THERMOPLASTIC TUBING
John Bennett Lyon, Richmond, Va., and Hung Han Yang, Clinton, Iowa, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 756,477, Aug. 30, 1968, abandoned. This application Nov. 18, 1970, Ser. No. 90,832
Int. Cl. B29c 25/00
U.S. Cl. 425—72 **3 Claims**



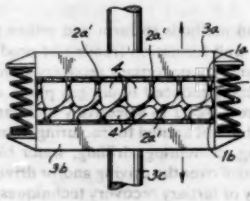
Tubular film casting and orientation by extruding a molten thermoplastic polymer (e.g., polyethylene or polypropylene) through an annular die and melt-drawing the tubular film over an undercut internal quench mandrel while directing helium along the undercut portion of the mandrel, preferably at a pressure sufficient to resist film neck-in.

3,765,809
APPARATUS FOR MAKING PLASTIC ARTICLES OF IRREGULAR DESIGN
John J. Farrell, 40 Abby Ln., Greenbrook, N.J.
Filed Mar. 10, 1972, Ser. No. 233,432
Int. Cl. B29c 27/14; B29d 9/00
U.S. Cl. 425—109 **11 Claims**



For making molded articles, such as open panels with decorative cross pieces and outside border frames, this invention has nozzles from which molten material is extruded onto a moving surface on which the material cools and hardens. The nozzles are moved with respect to the moving surface and to one another during the extruding operation to lay down bands that extend in various directions and that contact with one another while molten to merge into a one-piece panel. Repetitive connected paels are formed and are cut apart by a flying cutoff.

3,765,810
MOLDING DEVICE
Walter H. Smarook, Somerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed Dec. 29, 1971, Ser. No. 213,276
Int. Cl. B29c 27/14
U.S. Cl. 425—110 **20 Claims**



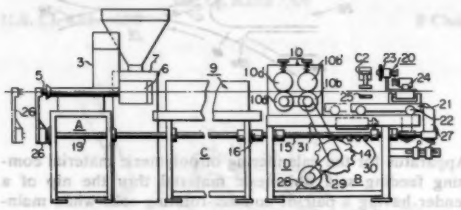
A device for expanding the cross section of thermoformable material at low pressures which comprises,
a base platen and a top platen whose contact surfaces have a fusion point of ≥ 70°C. and are adapted to bond to thermoformable material by hot tack adhesion, and
one or both of such platens are adapted to vent air through a portion thereof during the expanding of the thermoformable material between the platens by pulling the platens apart while the thermoformable material is bonded thereto by hot tack adhesion,
means to heat the platens to ≥ 70°C., and
means to pull the platens apart while the thermoformable material is bonded thereto.

3,765,811

APPARATUS FOR MANUFACTURING STANDARD-LENGTH ARTICLES COVERED WITH PLASTIC MATERIAL

Takehiko Sawada, Kawasaki, Japan, assignor to Ikegai Tekko Kabushiki Kaisha and Dai Nippon Ink Kagaku Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 3, 1972, Ser. No. 214,929
Claims priority, application Japan, Jan. 18, 1971 46/1155
Int. Cl. B29d 3/00
U.S. Cl. 425—113 7 Claims



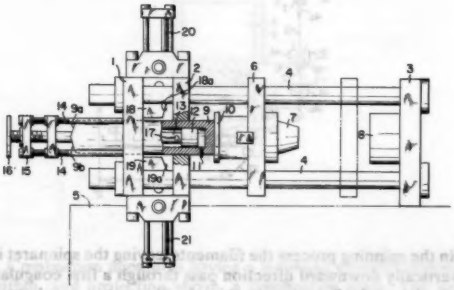
An apparatus for manufacturing standard-short-length articles covered with a plastic material comprises means for automatically and successively supplying standard-short-length cores one by one therefrom, means for receiving said cores and moving them in longitudinally aligned relationships into a cross head die of an extruder where said cores are continuously covered with the plastic material and are made in the form of a long continuum, a take-off equipment for drawing said continuum at a predetermined speed, and means for cutting said continuum, after passed through said take-off equipment, at portions between adjacent ends of the successive cores. In order to enable the continuum to be cut in the desired portions, the core moving means and the cutting means as well as the take-off equipment are adapted to operate at the same speed.

3,765,812

MOLD CLAMPING MECHANISM FOR MOLDING MACHINE

Shichiro Sugiyama, Shimizu, Japan, assignor to Kawaguchi, Ltd., Shizuoka-ken, Japan

Filed May 13, 1971, Ser. No. 142,886
Claims priority, application Japan, May 13, 1970, 45/40146
Int. Cl. B29f 1/06
U.S. Cl. 425—150 3 Claims



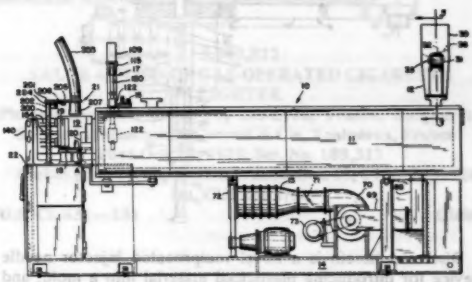
The present invention relates to a clamp mechanism of a molding machine comprising a wedge capable of making reciprocal movement perpendicularly towards and away from the axial core of a moving cylinder. One end of the cylinder is provided with at least one oblique surface having the same angle as the wedge. The wedge is moved towards the moving cylinder as the cylinder approaches the end of the mold clamping stroke, and the oblique surface of the wedge engages the oblique surface of the moving cylinder to the effect that the expanding force caused by the wedge effect generated by said engagement is utilized as the clamping force.

3,765,813

BLOW MOLDING APPARATUS

Lawrence A. Moore, B-816 Valley View Apartments, King of Prussia, Pa.

Continuation of Ser. No. 3,003, Jan. 15, 1970. This application July 28, 1972, Ser. No. 276,071
Int. Cl. B29d 23/03
U.S. Cl. 425—174 41 Claims



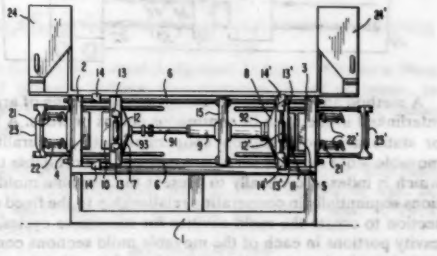
Cold parisons are conveyed through an oven for heating and then stretched and blown in a mould. A transfer assembly engages the upper end of each heated parison, removes it from the oven, and swings it into a mould and then rises to stretch the parison as a threading die holds the lower end thereof. The mould then closes and air is injected to form the bottle, after which the mould opens and the finished bottle is removed.

3,765,814

APPARATUS HAVING PLURAL MOLD MEMBERS FOR PRODUCING SHAPED ARTICLES OF FOAMED THERMOPLASTIC RESIN

Masato Yaita, Ibaraki, Japan, assignor to Sekisui Plastic Co., Ltd., Nara, Japan

Filed Nov. 24, 1971, Ser. No. 201,897
Claims priority, application Japan, Nov. 24, 1970, 45/103792; July 1, 1971, 46/47655
Int. Cl. B29d 27/04
U.S. Cl. 425—233 3 Claims



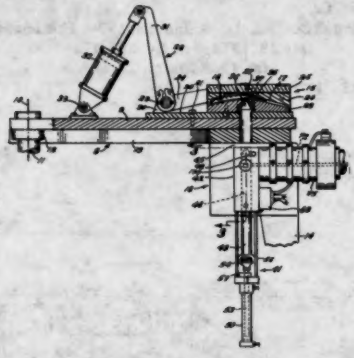
A process and apparatus for producing shaped articles of foamed thermoplastic resin, wherein there are two mold cavities that are opened and closed separately by at least one slidable cylinder. Movable mold members are secured to both ends of the cylinder and serve to define the mold cavities together with stationary mold members.

3,765,815

INJECTION MOLDING APPARATUS FOR PLASTICIZED MATERIAL

Charles J. Hunt, Morning View, Ky., assignor to Vulcan Corporation, Cincinnati, Ohio

Filed Jan. 6, 1971, Ser. No. 104,258
Int. Cl. B29f 1/02
U.S. Cl. 425—244 1 Claim



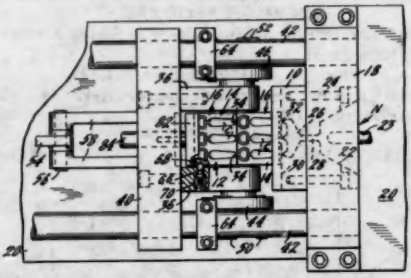
Disclosed herein is a novel reciprocated injector needle device for introducing plasticized material into a mold, and turret type molding apparatus devised to cooperate with the injector needle device in an efficient and improved manner.

3,765,816

APPARATUS FOR MOLDING PLASTIC

Walter James Dobbins, Lake Zurich, Ill., assignor to American Can Company, New York, N.Y.

Division of Ser. No. 856,346, Sept. 9, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 214,786
Int. Cl. B29f 1/00
U.S. Cl. 425—246 11 Claims



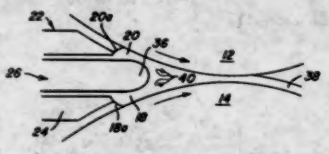
A method and machine for the injection molding of articles interlinked in the form of continuous chains or webs. A fixed or stationary mold section cooperates with a plurality of movable mold sections which are carried on a rotatable turret which is indexed cyclically to present the movable mold sections sequentially in cooperating relationship to the fixed mold section to create the mold cavities for successive cycles. The cavity portions in each of the movable mold sections connect with those in the succeeding movable mold section in end-to-end relationship. As a result, at the end of each molding cycle, the batch of molded articles is carried away from the fixed mold section by rotation of the turret, but its trailing end remains in communication with the mold cavities which are being filled in the succeeding molding cycle so that the leading end of the next batch of articles fuses to it to form one or more continuous chains of articles.

3,765,817

APPARATUS FOR THE CALENDERING OF POLYMERIC MATERIALS

Fred H. Ancker, Warren, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 839,292, July 7, 1969, Pat. No. 3,658,978. This application Oct. 28, 1971, Ser. No. 193,512
Int. Cl. B29c 15/00
U.S. Cl. 425—325 6 Claims



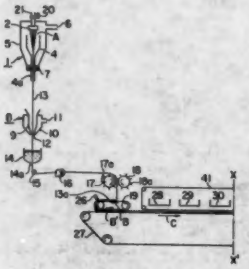
Apparatus for the calendering of polymeric material comprising feeding said polymeric material thru the nip of a calender having a pair of counter-rotating rolls while maintaining a volumetric obstruction across the width and between the pair of calender rolls, the most downstream projection of said obstruction being positioned so as to at least penetrate the bank of material formed between the pair of calender rolls upstream of the nip by the selection of calendering conditions and while concurrently feeding a stream of polymeric material to said nip opening on each side of said volumetric obstruction.

3,765,818

HIGH SPEED WET SPINNING TECHNIQUE

Toshio Miyazaki; Etuzou Omura; Kyoku Katakabe; Minoru Makita; Kenji Iwase; Hideo Tsutsumiuti; Takashi Yotsumoto; Fumiaki Ikeda; Yoshiro Takashima; Hiromu Sueyoshi, and Tomio Maesaka, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 94,468, Dec. 2, 1970, Pat. No. 3,689,620. This application June 28, 1972, Ser. No. 266,965
Claims priority, application Japan, Dec. 2, 1969, 44/96347; Dec. 2, 1969, 44/96348
Int. Cl. B29f 3/00
U.S. Cl. 425—445 1 Claim



In the spinning process the filaments leaving the spinnaret in a vertically downward direction pass through a first coagulating bath and the fluid entrained by the filaments is decelerated by means of concentric angularly directed jets of fluid prior to passage through a second coagulating bath. The filament may then pass-over a bar which changes the direction of the filament and removes entrained fluid. Further coagulating bath treatment may be provided by passage through the trough of a saddle guide prior to passage between a pair of vane type rolls for shaking the remaining bath fluid from the filaments. The

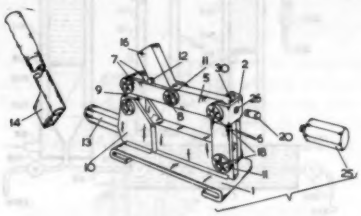
filaments are then loosely deposited on a travelling web for further treatment. Specific apparatus for carrying out the process is provided including elastic covered vanes on the rolls as well as several embodiments for the decelerating fluid jet arrangement.

3,765,819

CLAMPING ARRANGEMENTS FOR USE WITH MOULDS

David John Townsend, Ollerton, England, assignor to Dewston (Engineering) Limited

Filed July 23, 1971, Ser. No. 165,661
Int. Cl. B28b 7/04
U.S. Cl. 425—450 8 Claims



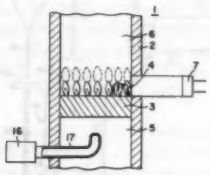
A clamping arrangement for use with moulds having at least one removable side wall comprises a clamping member adapted to engage said side wall and a toggle mechanism connected to said clamping member for urging said side wall against the mould. The mould may be a mould for moulding concrete.

3,765,820

COMBUSTION APPARATUS

Toshio Ito; Tamotsu Nomaguichi; Masahiro Sakai, and Koji Ito, all of Hyogo-ken, Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1972, Ser. No. 285,376
Claims priority, application Japan, Feb. 3, 1972, 47/12392
Int. Cl. F23n 5/08
U.S. Cl. 431—75 4 Claims



Combustion apparatus having a luminous element disposed within, and projecting above, a combustion plate. The light emitted by the luminous element, which will depend upon the state of combustion, is detected by a light detector, which through appropriate electronic circuitry containing various electronic components, will operate to control the air supply to the combustion housing whereby a proper combustible mixture for stable combustion is constantly being maintained. In like manner, the fuel supply may be controlled, in lieu of controlling the air supply.

3,765,821

FLASH LAMP

Charles Brecher, Little Neck, N.Y., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Oct. 14, 1971, Ser. No. 189,134
Int. Cl. F21k 5/02
U.S. Cl. 431—93 16 Claims

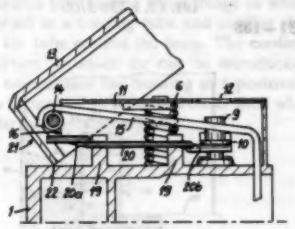
A flash lamp comprising a sealed transparent bulb containing a solid substance and an oxidant gas, and having an ignition mechanism associated therewith. The solid substance is coated with a combustion accelerator which decreases the time from ignition of the solid substance until the luminous flux created by such ignition increases to its maximum value. The combustion accelerator is a totally halogenated inorganic or organic compound having at least one chlorine atom in its molecular structure.

3,765,822

VALVE ACTION OF GAS-OPERATED CIGARETTE LIGHTER

Pierre Chevallier, Sainte-Foy-Les-Lyon, France, assignor to Societe Etablissements Genoud & Cie, Venissieux, France

Filed Oct. 14, 1971, Ser. No. 189,317
Claims priority, application France, Oct. 15, 1970, 7037726
Int. Cl. F23q 2/08
U.S. Cl. 431—131 1 Claim



This valve action of gas cigarette-lighter having a cap hingedly mounted to the head of the lighter body comprises a floating pivot pin adapted, during the cap opening movement, to actuate a cranked lever actuating in turn the valve control rod and, during the cap closing movement, the cranked lever is actuated in the opposite direction, spring means returning the valve to its closed position.

3,765,823

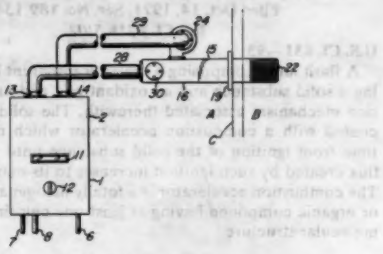
FORCED SUCTION AND EXHAUST TYPE GAS BURNER APPARATUS

Norio Kawabata, Yamatokoriyama; Nobuyuki Kimpara, Nara, and Manabu Takata, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 26, 1971, Ser. No. 192,281
Claims priority, application Japan, Nov. 5, 1970, 45/97668; Nov. 5, 1970, 45/97669; Nov. 5, 1970, 45/97670; Apr. 26, 1971, 46/27788; Nov. 5, 1970, 45/110093; Apr. 9, 1971, 46/27319
Int. Cl. F23l 17/00
U.S. Cl. 431—157 3 Claims

A forced suction and exhaust type gas burner apparatus comprising a gas burner unit and a fan motor for forcibly sucking air into said burner unit from the outdoor and exhausting the combustion gases from said burner unit to the outdoor so as to prevent air pollution in the room in which the burner unit is disposed and thereby to provide a sanitary environment inside the room. The gas burner apparatus is so

designed that a stable combustion can be obtained and the suction and exhaust can be achieved in a rational manner, irrespective of variations in the flow resistances of suction and exhaust passages, the type of a gas used and line voltage and of differences in local frequency.

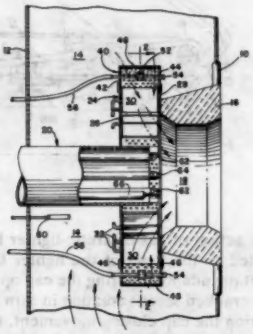


3,765,824

APPARATUS FOR DETERMINING AIR FLOW TO A GAS BURNER

Norman K. Trozzi, West Caldwell, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Aug. 2, 1972, Ser. No. 278,839
Int. Cl. F23n *3/00*
U.S. Cl. 431—188 **8 Claims**



An apparatus for determining air flow to one or more burners of a furnace or the like wherein an enclosure is provided which surrounds the burners and receives air for supply to the burners. A register assembly is provided in the enclosure and cooperates with the burners to direct a predetermined portion of the air to a combustion zone adjacent each of the burners. A static pressure zone is created for the latter portion of air to enable its static pressure to be measured and the air flow to be determined.

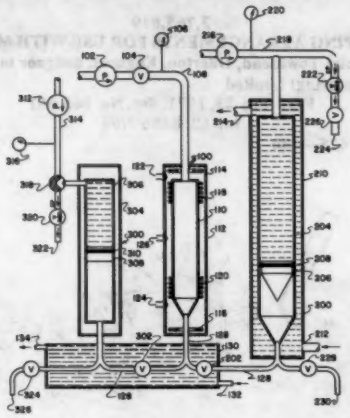
3,765,825

VISCOSITY REDUCTION OF KAOLIN BY HYDROTHERMAL TREATMENT

Vernon J. Hurst, 445 Westview Drive, Athens, Ga.

Continuation-in-part of Ser. No. 843,656, July 22, 1969, Pat. No. 3,614,075. This application July 26, 1971, Ser. No. 166,173. The portion of the term of this patent subsequent to Oct. 19, 1988, has been disclaimed.
Int. Cl. F27b *3/04*
U.S. Cl. 432—18 **7 Claims**

A hydrothermal treatment for processing kaolin clay slurries containing from 5 – 60% solids in which the plastic crudes are treated between 200° – 460° C. at pressures up to 30,000 pounds pressure per square inch for from 1 – 60 minutes reduces the viscosity of the kaolin slurry at least 20% and often as much as 50 to 90%, producing viscosities on the order of 100 cps at 20 rpm Brookfield or lower. A particularly advantageous embodiment of the present invention is the continuous hydrothermal treatment of kaolin slurries.



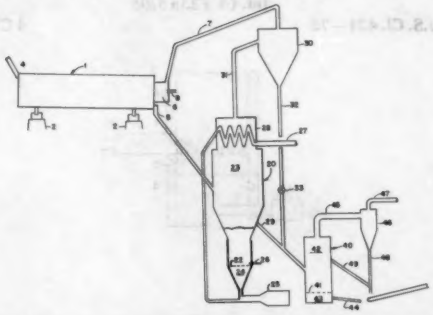
It has also been found particularly advantageous to employ certain monovalent and divalent cations in the hydrothermal treatment and to utilize somewhat lower temperatures than would be expected in the process of reducing the viscosity of kaolin clays.

3,765,826

METHOD AND APPARATUS FOR TREATING MATERIALS

Sidney M. Cohen, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.

Division of Ser. No. 51,702, July 1, 1970, and a continuation-in-part of Ser. No. 687,867, Dec. 4, 1967, abandoned. This application Apr. 12, 1972, Ser. No. 243,487
Int. Cl. F27b *15/00*
U.S. Cl. 432—58 **9 Claims**



A method, and an apparatus for executing such method, of making sealed surface fine lightweight aggregate particles comprising the steps of pretreating argillaceous rock particles so as to form fine aggregates; maintaining such fine aggregates as a dense fluidized bed in a fluid bed reactor wherein the fines therein are of variable size ranging from 0. mm to about 9.5 mm and have an even distribution of the various sizes within such range; subjecting the dense fluidized bed to a supply of

fuel and hot oxygen gas containing fluidizing and combustion gases, such fuel being introduced at least in part directly into the bed; continuously introducing pretreated fine aggregates to the bed; and continuously removing finished lightweight aggregate particles having sealed surfaces from the reactor.

3,765,827

INCLINED HEARTH KILN FOR THE FIRING AND SINTERING OF MATERIAL

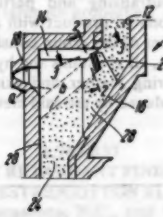
Karl Beckenbach, Hildegundisallee 33, Buderich B/Dusseldorf, Meererbusch, Germany

Filed July 24, 1972, Ser. No. 274,237

Claims priority, application Germany, July 28, 1971, P 21 37 723.1

Int. Cl. F27b *1/00*

U.S. Cl. 432—95 **5 Claims**



An inclined burning and sintering kiln has a combustion chamber having a combined inlet and preheating shaft terminating, at the level of a roof of the chamber, above the upper end of a sloping operative surface of the chamber. A partition extending across the chamber below the lower edge of the inlet shaft wall which adjoins the roof, and thus below the level of the inside of the roof, reduces the thickness of the build-up layer on the operative surface of material passing into the chamber via said inlet shaft, over said operative surface to a discharge shaft at the bottom of the chamber, and thus renders more efficient the treatment of the material.

3,765,828

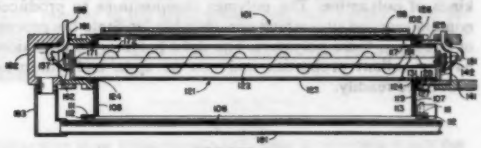
FUSING APPARATUS

Adalbert A. Lux, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 5, 1972, Ser. No. 250,635

Int. Cl. F21v *29/00*; F27b *15/16*

U.S. Cl. 432—233 **12 Claims**



Fusing apparatus for fusing a toner image in which a flash lamp is supported in a cooling tube and cooling air is circulated through the tube around the lamp. The cooling tube includes an aperture by which air can be introduced into the fuser housing to maintain the housing at a positive pressure. The housing is formed of an inner and outer shell which define an insulating air gap therebetween.

CHEMICAL

3,765,829
COLOURABLE POLYOLEFIN COMPOSITIONS

Bernard Lambert, Lens, and Adrien Nicco, Bethune, both of France, assignors to Societe Anonyme dite: Ethylene Plastique, Courbevoie, France

Filed Dec. 7, 1970, Ser. No. 95,973
Claims priority, application France, Dec. 9, 1969, 6942592
Int. Cl. C08f *29/10*; D06p *3/00*
U.S. Cl. 8—4 **14 Claims**

Polyolefin compositions are difficult to dye and a method is proposed which comprises incorporating 2 to 15 percent by weight of a statistical copolymer of ethylene and maleic anhydride. In a preferred form of the invention the polymer composition is subjected to amination with one of the various kinds of polyamine. The polymer compositions so produced contain reactive sites which considerably facilitate the process of dyeing of these polymers. The dyed polymer compositions have excellent properties and can be spun and otherwise processed readily.

3,765,830
POLYESTER FIBERS DYED WITH MONOAZO COMPOUNDS

Max A Weaver, and Herman S. Pridgen, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 728,788, May 13, 1968. This application Jan. 4, 1972, Ser. No. 215,400
Int. Cl. C09b *27/00*
U.S. Cl. 8—41 C **12 Claims**

Polyester fibers are dyed bright, fast yellow to blue shades with a monoazo compound containing a substituted phenyl diazo component and an N,N-di-aralkyl-m-acylamidoaniline coupling component.

3,765,831
TREATMENT OF POLYPEPTIDE FIBRES

Claude Jean Michel Senez, Chantilly, France, assignor to Ugine Kuhlmann, Paris, France

Filed Nov. 2, 1971, Ser. No. 195,019
Claims priority, application France, Nov. 3, 1970, 7039457
Int. Cl. D06p *3/14*
U.S. Cl. 8—54 **7 Claims**

The present invention provides a process for dyeing polypeptide fibres which comprises dyeing said fibres with an anionic dyestuff in the presence of (1) at least one polyoxyalkylenated non-ionic dispersing agent resulting from the condensation of an alkylene oxide with an aliphatic alcohol or an alkylphenol and (2) at least one polyoxyalkylenated condensate resulting from the condensation of an alkylene oxide with an aliphatic amine containing 12 to 20 carbon atoms and esterification with an oxygen-containing polyacid. There are also provided compositions comprising said dispersing agents and said polyoxyalkylenated condensates.

3,765,832
DYE SOLUTIONS THICKENED WITH BORAX CROSSLINKED POLYGALACTOMANNAN CARBOXY-, HYDROXY- OR CARBANYLALKYL ETHERS

Gerald J. Shelso, and Barnabas Seaman, both of Minneapolis, Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed Apr. 14, 1972, Ser. No. 244,233
Int. Cl. D06p *1/48*
U.S. Cl. 8—91 **9 Claims**

An improvement in fabric dyeing and printing comprising thickening cationic dye solutions with selected polygalactomannan derivatives.

3,765,833
FAT-LIQUORING COMPOSITIONS

Jurgen Plapper, Dusseldorf-Holthausen; Werner Stein, Erkrath-Unterbach Rhineland, and Horst Baumann, Hilden Rhineland, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthousen, Germany

Filed Oct. 7, 1970, Ser. No. 78,964
Int. Cl. C14c *5/00*, *9/02*
U.S. Cl. 8—94.21 **6 Claims**

A fat-liquoring compositions for animal skins and leather containing as the active substance a content of an olefin sulfonation product produced by reacting an unbranched olefin or an olefin with a branched alkyl chain attached to one of the carbon atoms of the double bond with a strong sulfonating agent and then neutralizing and partially or completely hydrolyzing the sulfonated product with an aqueous solution of at least one member of the group consisting of alkali metal hydroxides, ammonia, alkyl amines and hydroxyalkyl amine, a method of fat-liquoring leather and skins and fat-liquored leather and skins produced by the said method.

3,765,834
SIMULTANEOUS DESIZE-SCOUR-BLEACH WITH ACTIVATED HYDROGEN PEROXIDE

Leonard Allan Silver, and Robert Emil Yelin, both of Willingboro, N.J., assignors to FMC Corporation, New York, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,403
Int. Cl. D06l *3/02*
U.S. Cl. 8—111 **4 Claims**

This invention provides a combination desizing, scouring and bleaching process for greige textiles employing an alkaline hydrogen peroxide and peroxydiphosphate.

3,765,835
ANIONIC DISPERSION OF A SALT OF A CATIONIC DYE AND A SELECTED ARYLSULFONATE

Ray Allen Clarke, Pitman, N.J.; Erik Kissa, Wilmington, Del., and Harvey I. Stryker, Carney's Point, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 25, 1968, Ser. No. 724,238
Int. Cl. D06p *3/18*
U.S. Cl. 8—41 A **12 Claims**

An aqueous dispersion of (1) a water-insoluble salt of a cationic dye and a selected anion of an arylsulfonic acid with (2) an anionic dispersing agent selected from lignin sulfonate or a salt of a sulfonated naphthalene-formaldehyde condensate.

The salts can be represented by the formulas $D^+Ar'SO^-_3$ and $K^+ArSO^-_3$ where D^+ is a cationic dye having a resonating or delocalized positive charge and Ar' is an aryl group substituted with substituents such that the summation of the pKa increments for the substituents is equal to or less than −0.9; and K^+ is a cationic dye having a localized positive charge and Ar is an aryl group substituted with substituents such that the summation of the pKa increments for the substituents is equal to or less than −0.6.

The aqueous paste dispersions of the salts can be employed to dye acid-modified polyamide,polyester, or acrylic fibers, either alone or in a blend, by a number of dyeing techniques, including Thermosol, Pad Steam, Pad Roll or Exhaust Dyeing.

3,765,836

PROCESS FOR CREASEPROOFING CELLULOSE-CONTAINING FABRIC WITH GLYOXAL-UREA-FORMALDEHYDE REACTION PRODUCT AND A BORON COMPOUND

Ronald Louis Readshaw, South Charleston, and George Henry Lourigan, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,565
Int. Cl. D06m *13/40, 15/58*
U.S. Cl. 8—115.7 5 Claims

In combination glyoxal and a boron containing compound selected from the group consisting of the alkali metal borates and boric acid, the combination being incorporable into a resin forming reaction mixture to produce a durable press finish, and an improved process for treating textile fabrics with the same thereby yielding a treated fabric of significantly less discoloration then heretofore known and one exhibiting at the same time, improved strength properties.

3,765,837

FLAME RETARDANT FINISH FOR POLYESTER/COTTON BLENDS

Ben F. Aycock, Greensboro, N.C., and Giuliana C. Tesoro, Dobbs Ferry, N.Y., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Sept. 3, 1971, Ser. No. 177,857
Int. Cl. D06m *13/28, 13/44, 13/54*
U.S. Cl. 8—115.7 15 Claims

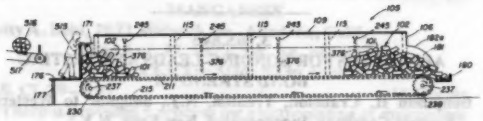
A process for decreasing the flammability of textiles comprising a cellulosic fiber component and preferably a nitrogen-free thermoplastic fiber component which comprises treating the cellulosic fiber component with a condensate or a physical admixture of an allylurea and a phosphine/formaldehyde condensate such as a tetrakis (hydroxymethyl)-phosphonium salt to introduce allyl groups into the cellulosic component, and subsequently halogenating, preferably brominating, the allyl groups thus introduced.

3,765,838

CONTINUOUS WASHING METHOD

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214. This application Sept. 28, 1971, Ser. No. 184,576
Int. Cl. B05c *5/00*
U.S. Cl. 8—154 27 Claims



Method and apparatus for loosening soil from a mass of pervious cloth in which wash solution is applied to the rolls in the form of a plurality of reciprocable cascades to maintain the surfaces of the pervious cloth wet for a time sufficient to saturate the same; excess wash solution is continually drained from the mass of tightly-wound rolls.

3,765,839

PROCESS FOR IMPROVING THE WET FASTNESS PROPERTIES OF DYEINGS ON POLYAMIDE FIBRE MATERIAL

Volkmar Mueller, Arlesheim; Hans Ulrich Berendt, Allschwil, and Melvin Harris, Dornach, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 24, 1971, Ser. No. 174,534
Claims priority, application Switzerland, Sept. 3, 1970, 13145/70
Int. Cl. D06p *5/04*
U.S. Cl. 8—165 10 Claims

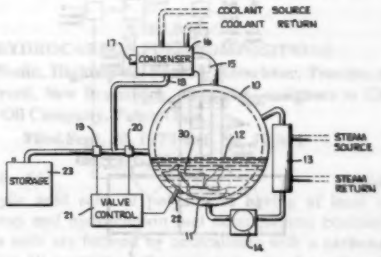
A process for improving the wet fastness properties of dyeings on synthetic polyamide fiber material is provided. The process is characterized in that preparations are applied to the fiber material at temperatures of 20° to 120°C, which contain a water-soluble fixing agent with affinity for the fiber, an organic solvent or solvent mixture and at most 10 percent of water, relative to the preparation, and also, optionally an organo-soluble dispersing agent. The fiber material thus treated shows very good fastness properties and no deterioration of handle.

3,765,840

PROCESS FOR CONTROLLING THE TEMPERATURE OF A DYEING MIXTURE

Larry L. Durr, Indianapolis, and Byron Jan Clay, Brownsburg, both of Ind., assignors to Textile Technology, Inc., San Diego, Calif.

Filed May 20, 1971, Ser. No. 145,396
Int. Cl. D06p *1/68*
U.S. Cl. 8—175 10 Claims



A process and apparatus is disclosed which is used in dyeing textiles. The dye liquor has less than 10 percent water in perchlorethylene along with a dye and an emulsifier to keep the water emulsified in the perchlorethylene. The dye liquor is heated to cause the mixture to boil and the vapors are condensed. The condensed vapors are directed away from the dye liquor until a desired temperature is reached, at which point they are directed back to the dye liquor to prevent a further temperature increase.

3,765,841

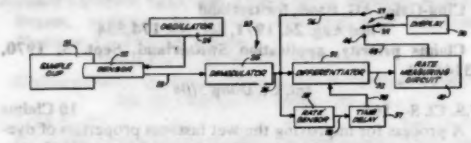
METHOD AND APPARATUS FOR CHEMICAL ANALYSIS

Gerald L. Paulson, Anaheim, and Robert A. Ray, Fullerton, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Aug. 6, 1971, Ser. No. 169,687
Int. Cl. C12k *1/10*; G01n *27/06, 33/16*
U.S. Cl. 23—230 R 32 Claims

A method and apparatus for determining the concentration of a component in a sample, i.e. the concentration of urea in biological fluids, such as blood serum, wherein the sample, upon being introduced into solution with a reagent, reacts therewith, causing a continuing change in a characteristic of

the solution, and wherein the rate of the reaction is indicative of the concentration of the component in the sample. A sensor is provided for monitoring the characteristic of the solution and for generating a first electrical output signal proportional



thereto. Differentiator circuit means are provided for producing a second electrical signal proportional to the time derivative of the first signal, the time derivative signal being indicative of the concentration of the component in the sample.

3,765,842

FIRE ALARM SIGNALLING SYSTEM

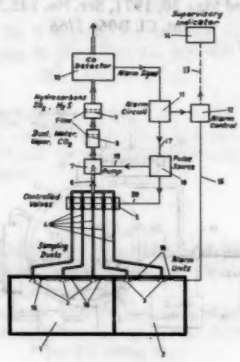
Gustav Purt, Rapperswil, Switzerland, assignor to Cerberus AG, Mannedorf, Switzerland

Filed July 21, 1971, Ser. No. 164,738

Claims priority, application Switzerland, July 31, 1970, 11607/70

Int. Cl. G01n *31/00*; G08b *21/00*

U.S. Cl. 23—232 R **30 Claims**



Air samples are removed through ducts connected to the spaces to be supervised on the one hand, and to a distribution valve on the other, which selectively switches the ducts through to a pump, which applies the sample from a selected space, through dust, water vapor, and carbon dioxide removing filters, as well as through other filters, to a carbon monixide (CO) detector which, upon detection, gives an alarm signal and further preferably controls the pump and the control valve to pump out more sample air from the particular space in which an increased CO content was detected. The CO detector may be an infrared (IR) spectroscope, a gas chromatograph, a system catalytically oxidizing CO to CO_2, and then detecting CO_2, a hot-wire detector, chemical detectors, of a fuel cell, or the like.

3,765,843

GROWTH OF TUBULAR CRYSTALLINE BODIES

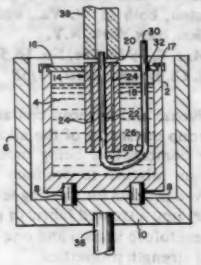
Harold E. Labelle, Jr., Quincy, and John S. Bailey, Charlestown, both of Mass., assignors to Tyco Laboratories, Inc., Waltham, Mass.

Filed July 1, 1971, Ser. No. 158,806

Int. Cl. B01j *17/18*

U.S. Cl. 23—301 SP **9 Claims**

The invention is a method and apparatus for producing composite materials and monocrystalline capillary tubes. Monocrystalline bodies of a material such as alumina are grown from a melt about small diameter, high temperature wires or filaments so as to form high strength composites. The



small wires or filaments may be removed from the composites so as to leave monocrystalline bodies with capillary size openings therein.

3,765,844

PRODUCTION OF URANIUM DIOXIDE

James A. Rode, St. Louis, Mo., assignor to United Nuclear Corporation, Elmsford, N.Y.

Continuation-in-part of Ser. No. 741,923, July 2, 1968, abandoned. This application Oct. 4, 1968, Ser. No. 765,071

Int. Cl. C01g *43/02*

U.S. Cl. 423—19 **10 Claims**

Uranium dioxide with low fluoride content and excellent milling characteristics suitable for making ceramic grade UO_2 pellets is produced by initially hydrolyzing uranium hexafluoride in a fluidized bed of UO_2F_2 particles at a temperature in the range between 500°F. and 900°F. and preferably between 650°F. and 750°F. to produce initially substantially nonhygroscopic free-flowing uranyl fluoride powder having an average particle size of +60 mesh. The uranyl fluoride thus obtained is subjected to at least two separate pyrohydrolysis treatments in fluidized beds with gaseous mixtures of hydrogen and steam to produce uranium dioxide. In the initial pyrolysis treatment, the ratio of hydrogen and steam is adjusted to provide a mixture with a relatively low defluorination potential and the flow rate of the mixture is also regulated to suppress the rate of defluorination. The resident time of the particle in the fluidized bed for the first pyrolysis treatment is sufficiently long so that about 98 percent of the fluoride in the feed is removed. The incompletely defluorinated particles are then further treated in a second fluidized bed with a hydrogen and steam gaseous mixture having a higher ratio of H_2/H_2O which will provide a higher defluorination potential and the gas rate is also preferably increased to reduce the partially defluorinated feed to uranium dioxide with a fluoride content less than about 100 ppm and preferably below 40 ppm.

3,765,845

APPARATUS FOR BONDING LEADS AND TESTING BOND STRENGTH

Benjamin H. Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

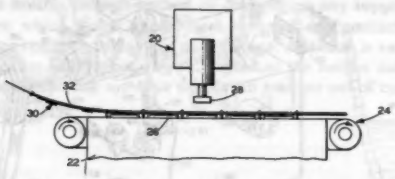
Division of Ser. No. 832,630, June 12, 1969, Pat. No. 3,634,930. This application Nov. 3, 1971, Ser. No. 195,169

Int. Cl. B32b *15/00*

U.S. Cl. 29—191.6 **5 Claims**

Bond strengths between bonded leads of electrical devices and conductive elements of circuit patterns are evaluated by pre-engaging a flexible member such as a wire or strip of metal with the electrical device prior to the making of the bond to be evaluated. The flexible member is engaged with the electrical

device with a predetermined releasability so that, when the flexible member is pulled, the member releases from the device if the bonds are of satisfactory strength but the bonds rupture if they are of unsatisfactory strength and, in this instance, the flexible member remains intact. Particular utility resides in employing this system to evaluate bond strengths of leads of beam-lead integrated circuits or transistors when such devices are bonded to thin film circuits.

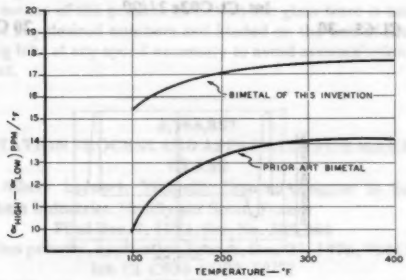


3,765,846

THERMOSTATIC BIMETALS

Arnold J. Gottlieb, Colonia, and George A. Majesko, Glen Ridge, both of N.J., assignors to W. M. Chace Company, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,531
Int. Cl. B32b *15/00*
U.S. Cl. 29—195.5 2 Claims



A thermostatic bimetal having a relatively high deflection is disclosed. The bimetal comprises as a high expanding side a manganese-nickel-copper alloy having specific ranges for nickel and the combined total of copper and one-half the nickel content is also within specific limits. The low expanding side is a nickel-iron-cobalt alloy with controlled amounts of manganese carbon and silicon.

3,765,847

PROCESS FOR PLATING ALUMINUM ALLOYS WITH MANGANESE

Betty A. Behl, 2071 Midwick Dr., Altadena, Calif.

Filed Apr. 17, 1972, Ser. No. 244,927
Int. Cl. C23b *5/30*; B23p *3/00*
U.S. Cl. 29—197 10 Claims

There is provided a process for electroplating of manganese containing aluminum alloys with manganese. In the process a tenacious bond of manganese metal to the alloy is achieved because the formation of a deposit of the oxides of manganese which have a low bond strength to aluminum and which readily flake from an aluminum surface is avoided. The product produced may be converted by oxidation to a catalytic surface converting ozone to oxygen, the oxides of nitrogen to inert nitrogen as well as the conversion of carbon monoxide to carbon dioxide.

3,765,848

MOTOR FUEL COMPOSITION

George Brent, 357 E. McMurray Rd., McMurray, Pa.

Filed Jan. 22, 1971, Ser. No. 109,005
Int. Cl. C10l *1/26*
U.S. Cl. 44—51 4 Claims

Sodium tripolyphosphate in powdered form is combined with a liquid hydrocarbon motor fuel, typically unleaded gasoline, kerosene or diesel fuel, to improve combustion.

3,765,849

FLOW IMPROVERS FOR HYDROCARBON OILS AND METHOD OF PREPARING SAME

Stephan Ilnyckyj, Maplewood, and Thomas Joseph Wallace, Whippany, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed July 7, 1971, Ser. No. 160,520
Int. Cl. C10m *1/26*; C10l *1/18*
U.S. Cl. 44—62 2 Claims

Copolymers of vinyl ester and an ester of a dialkyl unsaturated dicarboxylic acid prepared by partial transesterification of a short chain alcohol ester of said dicarboxylic acid with a C_{20} to C_{30} alcohol are flow improvers in residual and crude oils.

3,765,850

HYDROCARBON FUEL COMPOSITIONS

Elmer J. Badin, Hightstown, Paul M. Kerschner, Trenton, and Aldo Cresti, New Brunswick, all of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Sept. 30, 1970, Ser. No. 77,041
Int. Cl. C10l *1/18*, *1/22*
U.S. Cl. 44—66 5 Claims

Carboxylic acid salts of polyamides having at least one amino group and hydrocarbon fuel compositions containing same. The salts are formed by neutralizing with a carboxylic acid at least 10 percent of the amino groups of a polyamide containing from about 2 to about 6 amide groups and at least one amino group. Hydrocarbon fuel compositions containing these salts exhibit desirable properties such as enhanced carburetor detergency and carburetor anti-icing characteristics, improved water tolerance, improved anti-corrosion properties, and cleaner engine operation.

3,765,851

GAS PRODUCTION

Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 34,834, May 5, 1970. This application Dec. 14, 1970, Ser. No. 98,090
Int. Cl. C07c *3/32*, *11/02*; C10j *3/00*
U.S. Cl. 48—209 11 Claims

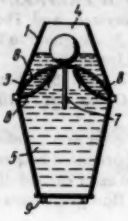
A process for the production of a synthesis gas and a light olefin which comprises simultaneously contacting an organic feed material containing at least 10 weight percent oxygen and a normally liquid hydrocarbon feedstock with steam in the presence of an alkali metal carbonate catalyst at an elevated temperature.

3,765,852

APPARATUS FOR PRODUCING FIBRES FROM MELTS

Edmund Khristianovich Shule, poselok GOZSV, 2, kv. 80, Krjukovo Moskovskoi oblasti; Sergei Sergeevich Kutukov, Likhaborsky pereulok 16, kv. 45; Evgeny Isaevich Rytvin, ulitsa Smolnaya, 43, kv. 67, both of Moscow; Alexei Andreevich Myagchenkov, poselok GOZSV, 4, kv. 33, Krujukovo Moskovskoi oblasti; Mikhail Davydovich Hodakovsky, ulitsa Nizhnyaya, II, kv. 59, Moscow; Nikolai Gavrilovich Bakanov, ulitsa Kommunisticheskaya, 18, kv. 4, Polotsk Vitabskoi oblasti; Nikolai Ivanovich Shevchenko, ulitsa Kommunisticheskaya, 18, kv. 5, Polotsk Vitebskoi oblasti, and Oleg Petrovich Shiman, ulitsa Kommunisticheskaya, 21, kv. 77, Polotsk Vitebskoi oblasti, all of U.S.S.R.

Filed July 19, 1971, Ser. No. 163,752
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 3 Claims



In the apparatus a cross partition serving as a heater and dividing the working chamber into a melting and a feeding zone has an upwardly convex shape, which together with an additional heater ensures intensification of the material melting process and the process of melt homogenization. This in turn permits a sharp increase in process efficiency and a reduction in the size of the structure.

3,765,853

PROCESS FOR MAKING METAL SPHERES IN OXIDE GLASSES

Eugene F. Riebling, Copley, Ohio, assignor to The University of Akron, Akron, Ohio

Filed July 31, 1972, Ser. No. 276,821
Int. Cl. C03c *27/04*
U.S. Cl. 65—18 10 Claims

A process for making small metal spheres encapsulated in an oxide glass. A metal compound, which decomposes to the elemental metal upon heating is mixed with oxide glass particles such that the final material contains from about 1 to about 15 percent of the metal by weight. The mixture is then heated to a temperature above the decomposition temperature of the metal compound as well as above the melting temperature of the metal wherein the oxide glass has a viscosity range of from 1 to about 5,000 poise. The mixture is then cooled to a temperature below the freezing point of the metal.

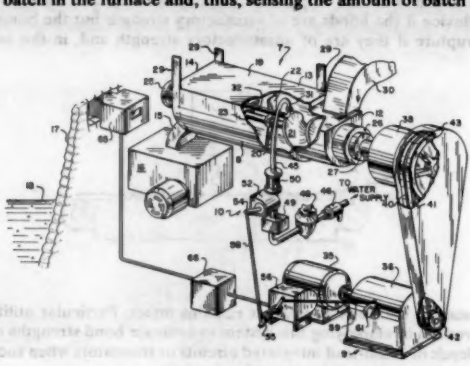
3,765,854

METHOD AND APPARATUS FOR MAINTAINING CONSTANT MOISTURE LEVEL IN A WETTED GLASS BATCH

Joseph J. Kozlowski, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Dec. 18, 1970, Ser. No. 99,435
Int. Cl. C03b *3/00*
U.S. Cl. 65—27 17 Claims

An apparatus and method is disclosed for automatically wetting glass batch to provide a constant moisture level in the batch. As glass batch is moved along a trough by rotating a screw assembly within the trough, a fluid, normally water, is added to and mixed with the batch. The moisture content of the glass batch is maintained constant by determining the level of batch in the furnace and, thus, sensing the amount of batch



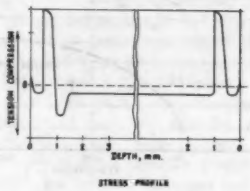
to be added and responsive thereto, the amount of water added is controlled by means of a water valve governing the flow rate of water into the trough.

3,765,855

ELECTRO-IONIC METHOD OF STRENGTHENING GLASS

Benjamin F. Larrick, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1971, Ser. No. 213,899
Int. Cl. C03c *21/00*
U.S. Cl. 65—30 20 Claims



A process for strengthening glass comprising (1) subjecting one face of sodium or lithium containing glass at a temperature above its annealing point to a current from a molten salt to affect replacement of sodium or lithium ions by larger ions, (2) repeating step (1) but using a molten sodium or lithium salt and allowing current to flow for a time greater than the time to be used in steps (3) and (5) combined; (3) subjecting the opposite face of the glass as in step (1) but with the current reversed, (4) chill-tempering the glass and (5) repeating step (3) but at a temperature which is below the strain point of the glass.

3,765,856

GLASS WARE ASSEMBLING AND LEHR LOADING MECHANISM

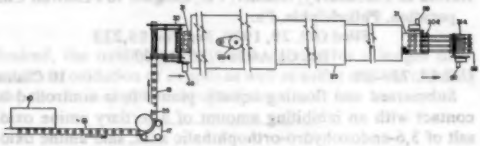
Edward W. Bowman, Uniontown, Pa., assignor to E. W. Bowman Incorporated, Uniontown, Pa.

Filed Mar. 28, 1972, Ser. No. 238,919
Int. Cl. C03b *25/04*
U.S. Cl. 65—60 16 Claims

This disclosure relates to apparatus for assembling glass ware such as bottles in rows, and in spaced relation, as they are delivered from a forming machine, and for loading the bottles on the conveyor belt of a glass annealing lehr without contact with each other.

Glass ware such as bottles are produced at the rate of 60 to 160 (or more) bottles per minute (depending on the number of forming sections) and the production of one or more forming machines is loaded on to the conveyor belt of a single glass annealing lehr.

The bottles are not pushed or dragged on any supporting surface which would cause them to upset and contact one another resulting in damage or breakage. Abrasion is entirely avoided by engaging the finish or neck of the bottles and lifting them from one movable support to another out of contact with each other.



This invention is particularly useful with modern nonabrading glass ware coating process which are applied before and after annealing and which is substantially impaired once the body of the glass ware has impacted one another by contact when upset by pusher mechanism or by the great speed of production which causes the ware to accumulate at a speed greater than the lehr loading mechanism is capable of handling.

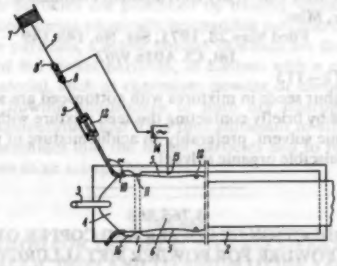
By means of the present invention the glass ware is assembled in any desired numbers and loaded on the belt of the annealing lehr at any speed necessary to avoid accumulation and contact.

3,765,857

FLOTATION PROCESS AND APPARATUS FOR MAKING GLASS

Jean Albert Lecourt, Villejuif, France, assignor to Saint-Gobain Industries, Neuilly-sur Seine, France

Filed Dec. 7, 1971, Ser. No. 205,564
Claims priority, application France, Dec. 22, 1970, 7046155
Int. Cl. C03b *17/00, 18/02*
U.S. Cl. 65—91 **22 Claims**



A method of improving the speed of production of flat glass by the flotation method, and of decreasing the thickness of a molten ribbon of flat glass supported on a liquid bath, which comprises heating the metal guide wires and putting them into the molten ribbon at a temperature at which the wires are more perfectly wetted by the molten glass than when the wires are at room temperature and maintaining the wires under tension sufficient to prevent stabilization by the forces of gravity and surface tension, and cooling the sheet.

3,765,858

METHOD OF ROLL FORMING A RIBBON OF GLASS AT HIGH TEMPERATURE

Frederick A. Settino, New Kensington, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 10, 1972, Ser. No. 233,747
Int. Cl. C03b *13/16*
U.S. Cl. 65—101 **4 Claims**

High-melting glass or glass-ceramic material is formed by being brought into contact with a member that has at least a surface portion thereof that consists essentially of an iron-base alloy having substantially the following composition: 0.12 to 0.18 percent carbon, 1.0 to 3.0 percent manganese, 0.25 to 1.25 percent silicon, 1.0 to 2.0 percent molybdenum, 5.0 to 5.8 percent chromium, 1.0 to 2.0 percent tungsten, balance substantially iron except for incidental impurities in minor amounts that do not affect the properties. In particular, it is advantageous to roll-form the glass or glass-ceramic material between rolls provided with a weld-overlay coating of the iron-base alloy mentioned above. Though such alloy is lower in strength and hardness than other alloys or steels such as AISI Type 410 or 420 stainless steel hitherto used for such purpose, it has been found in roll-forming experiments that such material has a service life of 18 to 34 days, rather than about 10 days or less for the prior-art alloys of greater strength and hardness hitherto used for the purposes indicated above.

3,765,859

METHOD OF LIQUID QUENCHING GLASS SHEETS

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 171,324, Aug. 12, 1971, abandoned. This application May 15, 1972, Ser. No. 253,354
Int. Cl. C03b *27/00*
U.S. Cl. 65—114 **15 Claims**

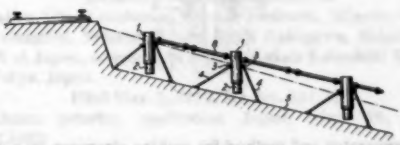
An improved method of quenching heated flat glass is described which involves applying to a surface on or adjacent at least one peripheral edge of the glass prior to heating it, an edge protecting composition taken from the class of compositions having a low coefficient of expansion compared to glass and/or a heat transfer coefficient not greater than glass while maintaining the major surfaces inwardly of each of said surfaces on or adjacent said peripheral edge substantially free of said protective composition. The glass with its edge so treated is then heated to above its strain point and below its softening point (at which temperature range said composition fuses to the glass) and subsequently quenched using a liquid medium having a high heat transfer coefficient.

3,765,860

ARRANGEMENT FOR PROCESSING SLAG

Fritz Forschepiepe, Asselner Hellweg 106, Dortmund-Asseln, Germany

Division of Ser. No. 44,987, June 10, 1970, Pat. No. 3,709,671. This application Dec. 6, 1971, Ser. No. 204,908
Claims priority, application Germany, June 14, 1969, P 19 30 394.7; Oct. 18, 1969, P 19 52 593.0
Int. Cl. C03b *18/00*
U.S. Cl. 65—141 **11 Claims**



Iron-containing slag in flowable state is poured into a casting bed to form a layer. Upright tubular conduits are em-

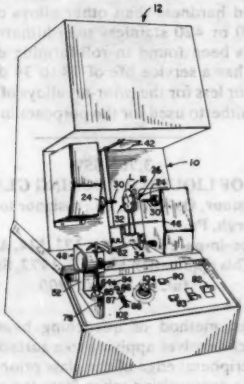
bedded in the layer during pouring, each having an upper section and a lower section telescoped from below over the bottom portion of the upper section. The upper sections have upper open ends outside the layer and explosive capsules are inserted through these into the lower sections and detonated. This ruptures the lower sections and forms in the slag layer cavities surrounding the lower sections. Cooling water is then introduced into the upper sections to flow into the layer via the lower sections and the cavities.

3,765,861

APPARATUS FOR HEAT TREATING LENSES

Hamilton B. Bole, Sturbridge, and Howard E. Chace, Southbridge, both of Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Apr. 21, 1972, Ser. No. 246,205
Int. Cl. C03b 27/00
U.S. Cl. 65—162 **4 Claims**



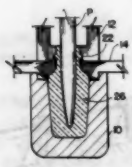
A lens heat treating machine having a furnace and lens elevating means for receiving and moving lenses into and out of the furnace for exposure to heating and cooling environments respectively. The machine incorporates electromechanical lens gauging means arranged to automatically program heating and cooling cycles according to color and thickness characteristics of lenses placed therein. Manual programming and operation of the machine is also provided for.

3,765,862

APPARATUS FOR MAKING GLASSWARE BY A PRESS AND BLOW TECHNIQUE

George E. Rowe, Wethersfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Apr. 2, 1971, Ser. No. 130,732
Int. Cl. C03b 9/00, 11/00
U.S. Cl. 65—229 **4 Claims**



An apparatus and method for making glassware by a press and blow technique wherein the pressed parison is formed in an upright mold construction. The said mold construction utilizes a relatively wide cavity body mold and a relatively narrow opening neck mold, and also an intermediate "transitional" mold which is placed between the neck mold and body mold when the parison is initially formed. The transitional or intermediate mold is opened after the parison has been formed to permit the parison to reheat and stretch before being placed in a blow mold or other final shaping mold where the parison is blown or otherwise expanded to the final size and shape desired for the article of glassware.

3,765,863

CONTROL OF AQUATIC PLANT LIFE

Harold L. Lindaberry, Ambler, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 29, 1970, Ser. No. 85,223
Int. Cl. A01n 9/20, 23/00
U.S. Cl. 71—66 **10 Claims**

Submersed and floating aquatic plant life is controlled by contact with an inhibiting amount of a tertiary amine oxide salt of 3,6-endoxohydro-orthophthalic acid, said amine oxide having the structure $R' N^{O}R^{2}R^{3}$ where R′ is alkyl having 8 to 20 carbon atoms and R^2 and R^3 are lower alkyl.

3,765,864

CONTROLLING ALGAE WITH 5-(5 BARBITURILIDENE)-RHODANINE

Al F. Kerst; John D. Doures, Jr., both of Littleton, and Milan Brokl, Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Filed Aug. 26, 1971, Ser. No. 175,341
Int. Cl. A01n 9/12
U.S. Cl. 71—67 **13 Claims**

The compound 5-(5′-Barbiturilidene)-Rhodanine can be used to inhibit and/or prevent the growth of many undesirable forms of algae. This invention is particularly concerned with the algaecidal properties of 5-(5′-barbiturilidene)-rhodanine against the algae species *Scenedesmus*, *Plectonema*, *Anabaena*, *Ankistrodesmus*, *Oscillatoria*, *Coccochloris*, *Chlamydomonas*, *Lyngbya*, *Synura*, and *Chlorella*.

3,765,865

DESTRUCTION OF COCKLEBUR SEEDS IN COTTONSEED

James E. Smith, State College; Avean Wayne Cole, and Alvin G. Douglas, both of Starkville, all of Miss., assignors to Mississippi State University Development Foundation, Inc., State College, Miss.

Filed May 28, 1971, Ser. No. 148,149
Int. Cl. A01n 9/02
U.S. Cl. 71—113 **4 Claims**

Cocklebur seeds in mixtures with cottonseed are selectively destroyed by briefly contacting the seed mixture with an aqueous organic solvent, preferably an acidic mixture of water and a water-miscible organic solvent.

3,765,866

PRODUCTION OF COPPER AND COPPER OXIDE POWDER FOR POWDER METALLURGY

Harbhajan S. Nayar, Waltham, Mass., assignor to Contemporary Research Inc., Natick, Mass.

Division of Ser. No. 758,449, Sept. 9, 1968, Pat. No. 3,551,136. This application Oct. 8, 1971, Ser. No. 79,355
Int. Cl. B22f 9/00
U.S. Cl. 75—0.5 B **2 Claims**

Copper base (including pure copper and copper alloy) or copper oxide powder is produced by atomizing a sulfurized copper base melt in the presence of oxygen to produce particles which are hollow as a result of sulfur dioxide formation therewithin, oxidizing the hollow particles in the presence of oxygen in order to cause weakening at the grain boundaries as

a result of more sulfur dioxide formation therein, and crushing in order to make available the copper base particles. If

desired, the oxidizing step, when carried for a longer time, results in oxidation of copper as well as sulfur and the crushing step results in copper oxide particles.

3,765,867

PREPARATION OF THORIATED NICKEL-CHROMIUM ALLOY POWDER

David John Ivor Evans, North Edmonton, Alberta; David Alan Wayne Fustukian, Edmonton, Alberta; Leon Frederick Norris, and Robert William Fraser, both of Fort Saskatchewan, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Division of Ser. No. 813,214, April 3, 1969, Pat. No. 3,716,357. This application May 8, 1972, Ser. No. 251,180

Int. Cl. B22f *9/00*

U.S. Cl. 75—0.5 BC **4 Claims**

Nickel-chromium alloy powder containing dispersed refractory oxide particles are produced by heating nickel powder particles containing physically inseparable sub-micron refractory oxide particles, a major portion of which are fixed in the surfaces of the nickel particles, in contact with a chromium source material, such as chromium powder or chromium oxide, in a flowing atmosphere of pure dry hydrogen at an elevated temperature and for a time sufficient to effect diffusion of chromium into the nickel particles and to reduce excess oxygen to an acceptable level.

3,765,868

METHOD FOR THE SELECTIVE RECOVERY OF METALLIC IRON AND TITANIUM OXIDE VALUES FROM ILMENITES

Olav Moklebust, deceased, late of Kendall Park, N.J. (by Gudrun Moklebust, executrix), assignor to N L Industries, Inc., New York, N.Y.

Filed July 7, 1971, Ser. No. 160,449

Int. Cl. C01z *23/04*; C22b *5/10*

U.S. Cl. 75—1 **9 Claims**

Metallic iron and titanium oxide values are recovered from ilmenite ores and concentrates in particulate form to the combined operations of solid state reduction and electric arc smelting.

3,765,869

METHOD OF PRODUCING IRON-ORE PELLETS

Uwe Schierloh, and Peter Heinrich, both of Oberhausen, Germany, assignors to Huttenwerk Oberhausen Aktiengesellschaft, Oberhausen, Germany

Filed Nov. 16, 1970, Ser. No. 89,805

Claims priority, application Germany, Nov. 24, 1969, P 19 58 845.5

Int. Cl. C21b *1/08*

U.S. Cl. 75—3 **3 Claims**

Green (nonfired) pellets of iron ore are prepared by pelletizing the iron ore and 2 to 8 percent by weight of finely divided metallic iron with a particle size below 45 microns in the presence of an aqueous solution, suspension or dispersion of an organic binder, preferably a carbonhydrate. Surprisingly, the low-temperature binder, i.e. the starch, dextrine or the like, in combination with the metallic iron powder, affords considerable structural integrity to the pellets during the initial and subsequent stages of the direct reduction in a shaft-type or rotary furnace.

3,765,870

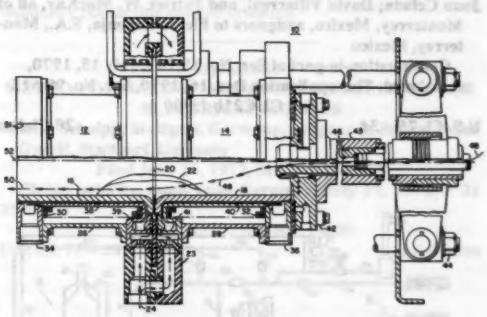
METHOD OF DIRECT ORE REDUCTION USING A SHORT CAP ARC HEATER

Maurice G. Fey, Turtle Creek, and George A. Kemeny, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 15, 1971, Ser. No. 208,264

Int. Cl. C22d *7/04*

U.S. Cl. 75—10 R **5 Claims**



The oxides of certain metals including iron, chromium, manganese, vanadium and titanium may be finely ground or otherwise pulverized and supplied in a gas flow stream to the heating region of an arc heater. In the heating region an electric arc capable of producing temperatures sufficient to free hydrocarbon radical ions from hydrocarbon gas may be used to assist in separating the metal from the metal oxide ore.

3,765,871

METHOD FOR CONTROLLING THE AMOUNT OF SILICON CONTAINED AS AN IMPURITY IN HIGH CARBON FERROCHROMIUM

Shinjiro Eda, Yokohama; Hiroshi Iwabuchi, Niigata; Kazuo Yamagishi, Yokohama, and Keiti Nakagawa, Shinminato, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1972, Ser. No. 231,326

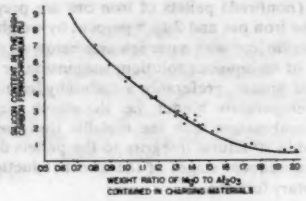
Claims priority, application Japan, Mar. 10, 1971, 46/12688

Int. Cl. C21c *5/52*

U.S. Cl. 75—12 **7 Claims**

A method for controlling the amount of silicon contained as an impurity in high carbon ferrochromium which, when there

is smelted high carbon ferrochromium by reducing raw chromium ores in a submerged arc furnace, consists in mixing fine chromium ores being used with proper amounts of other crushed raw materials rich in magnesium oxide or aluminum oxide fully to match the weight ratio of the magnesium oxide to the aluminum oxide both contained as impurities in said



raw chromium ores, whereby the proportion of silicon contained in the alloyed product can be controlled as desired by carrying out said mixing to such extent that the weight ratio of the magnesium oxide to the aluminum oxide present in the mixture attains a value indicated by any point on the correlation curve of the attached chart.

3,765,872

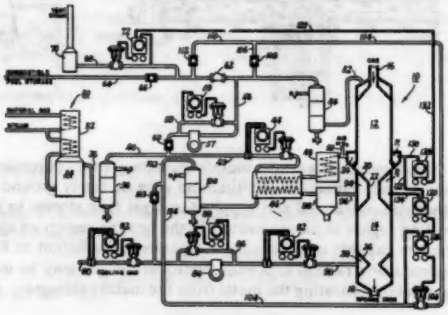
METHOD AND APPARATUS FOR THE GASEOUS REDUCTION OF IRON ORE TO SPONGE IRON

Juan Celada; David Villarreal, and Patrick W. MacKay, all of Monterrey, Mexico, assignors to Fierro Esponja, S.A., Monterrey, Mexico

Continuation-in-part of Ser. No. 55,161, July 15, 1970, abandoned. This application Dec. 16, 1970, Ser. No. 98,612

Int. Cl. C21b *13/00*

U.S. Cl. 75—34 **20 Claims**



Method and apparatus for reducing particulate metal ore, e.g., iron ore, to metal particles, e.g., sponge iron, in a vertical shaft, moving bed reactor having a reduction zone and a cooling zone wherein separate streams of reducing gas and cooling gas are used in the reduction and cooling zones, respectively, and means are provided for minimizing commingling of the two gas streams. In one embodiment a differential pressure controller is used to maintain substantially equal the gas pressure at the bottom of the reduction zone and the gas pressure at the top of the cooling zone. In another embodiment the flows of inlet gas to and outlet gas from the cooling zone are controlled to maintain these two flows substantially equal. Either or both of the reducing gas and cooling gas may be recycled in a closed loop.

3,765,873

METHOD OF PRODUCING FERRO-NICKEL OR METALLIC NICKEL

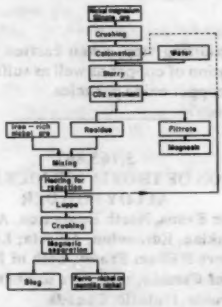
Yohta Sato, Tokyo; Masakata Matsuda, Miyazu; Yukio Ohi, Miyazu, and Toyomi Matsumori, Miyazu, all of Japan, assignors to Nippon Yakin Kogyo Company Limited, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,545

Claims priority, application Japan, Feb. 2, 1970, 45/8428; Feb. 9, 1970, 45/10906

Int. Cl. C22b *23/06*; C22c *37/00*; C01f *5/06*

U.S. Cl. 75—82 **8 Claims**



A method of refining nickel from iron-rich nickel ore by adding silica therein, so that the silica may form fayalite with iron in the ore for suppressing the reduction of iron by taking advantage of the very low reducibility of fayalite. Silica to be added to the iron-rich nickel ore can be prepared by separating magnesia from nickel magnesium silicate ore, while using the exhaust gas from the nickel refining process as the source of carbon dioxide gas required for the magnesia separation. In this case, magnesia becomes a by-product of the nickel refining process.

3,765,874

VACUUM DEGASSED, INTERSTITIAL-FREE, LOW CARBON STEEL AND METHOD FOR PRODUCING SAME

James A. Elias, Middletown; Rollin E. Hook, Dayton, both of Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 19, 1972, Ser. No. 255,108

Int. Cl. C22c *39/54*; C21d *7/02, 7/14*

U.S. Cl. 75—123 H **13 Claims**

A low carbon, vacuum degassed steel containing columbium, titanium and/or zirconium, having high ductility, no yield point elongation in the hot rolled and cold rolled and annealed conditions. The steel contains from 0.002 to 0.020 percent carbon, up to 0.60 percent manganese, from greater than 0.025 to 0.12 percent columbium, titanium when present from 0.015 to 0.12 percent, zirconium when present from 0.028 to 0.18 percent, up to 0.008 percent nitrogen, up to 0.010 percent total oxygen, up to 0.035 percent sulfur, up to 0.045 percent total aluminum, and balance substantially iron. The steel has extra-deep drawing quality.

3,765,875

INOCULATING ALLOY FOR CAST IRONS

Louis G. Septier, "Clte Jardin", and Jean-Claude G. Percheron, "Pen Duick", Rue des Maranches, both of Chedde, France

Filed July 19, 1971, Ser. No. 164,031

Claims priority, application France, July 23, 1970, 7027144

Int. Cl. C22c *31/00, 37/10*

U.S. Cl. 75—130 R **4 Claims**

The present invention relates to the sphere of alloys intended for improving cast iron, including the inoculation of

grey or spheroidal cast irons with an alloy having the following composition:

Silicon	55 to 85%
Carbon	0.2 to 1%
Calcium	2 to 5%
Aluminum	up to 2%

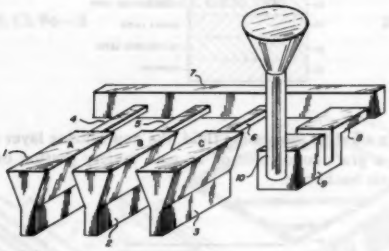
The remainder being iron with usual impurities.

3,765,876

METHOD OF MAKING NODULAR IRON CASTINGS

William H. Moore, Winker Ln., Westport, Conn.

Filed Nov. 1, 1972, Ser. No. 302,762
Int. Cl. C22c *33/00, 37/04*
U.S. Cl. 75—130 A **6 Claims**



The method of producing a nodular cast iron casting comprising the melting of a cast iron bath of low sulphur content and near eutectic composition with a chill value of no more than eight thirty-seconds inch as measured by a standard wedge test. The bath is preconditioned by adding a rare earth and an alkaline earth containing alloy in an amount sufficient to increase the chill value from 50 to 150 percent and then pouring the bath into a mold having at least one reservoir and a dam skimmer gate with the reservoir containing from one-fourth to 1 ¼ percent by weight of a magnesium alloy. The last mentioned alloy is sufficient in amount to retain at least 0.01 percent magnesium in the metal from the bath which passes through the alloy so as to produce a casting containing nodular graphite.

3,765,877

HIGH STRENGTH ALUMINUM BASE ALLOY

Philip R. Sperry, North Haven; Joseph Winter, New Haven, and Michael J. Pryor, Woodbridge, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Nov. 24, 1972, Ser. No. 309,134
Int. Cl. C22c *21/02*
U.S. Cl. 75—142 **11 Claims**

A high strength aluminum base alloy having good wear resistance consisting essentially of silicon from 7 to 20 percent, magnesium from 0.1 to 0.6 percent, silver from 0.1 to 1.0 percent, copper from 3.5 to 6 percent, balance essentially aluminum, and processing same.

3,765,878

ALUMINUM-SILICON ALLOYING PROCESS

Vaughn Lynn Bullough, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 21, 1972, Ser. No. 273,797
Int. Cl. C22c *1/06*
U.S. Cl. 75—148 **6 Claims**

Process for producing silicon-aluminum alloys which involves reacting a high-purity silica with molten aluminum in the presence of a flux at 900°–1,200°C for about 1 to 24 hours and controlling the quantity of flux and the rate of addition of the reactants such that any alumina in the system does not substantially exceed the amount which is soluble in the flux.

3,765,879

NICKEL BASE ALLOY

John Hockin; Carl H. Lund, both of Arlington Heights, and Michael J. Woulds, Shaumburg, all of Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 841,505, July 14, 1969, abandoned. This application Dec. 17, 1970, Ser. No. 99,232
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **3 Claims**

The present invention contemplates nickel-base alloys consisting in percent by weight essentially of about 0.1% to about 0.25% carbon, about 9% chromium, about 0.75% to about 2% titanium, about 5% to about 6.25% aluminum, about 8% to about 12% cobalt, about 8% to about 12% tungsten, about 0.8% to about 2.5% hafnium, about 0.002% to about 0.2% boron, up to about 0.15% zirconium and about 2.5% tantalum, with the balance being essentially nickel.

3,765,880

OHMIC CONTACTS FOR GALLIUM ARSENIDE SEMICONDUCTORS

Ronald H. Cox, and Hans A. Strack, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 881,927, Dec. 3, 1969, Pat. No. 3,669,655, which is a division of Ser. No. 598,701, Dec. 2, 1966, Pat. No. 3,544,854. This application Nov. 18, 1971, Ser. No. 200,153
Int. Cl. C22c *5/00*
U.S. Cl. 75—173 R **6 Claims**

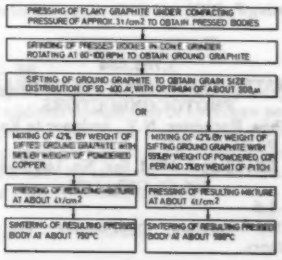
An improved ohmic contact includes an alloy of a silver base material, a wetting agent and a doping agent. In a specific imbodiment the alloy includes silver, indium and zinc. The alloy does not include tin and is particularly advantageous for ohmically contacting gallium arsenide.

3,765,881

METHOD OF MAKING METAL-CARBON BRUSHES FOR ELECTRICAL MOTORS

Martin Scholpp, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 26, 1972, Ser. No. 265,971
Claims priority, application Germany, July 17, 1971, P 21 35 537.3
Int. Cl. B22f *1/00*; H01r *9/00*
U.S. Cl. 75—201 **8 Claims**


PRESSING OF FLAKY GRAPHITE UNDER COMPACTING PRESSURE OF APPROX. 3 t/cm2 TO OBTAIN PRESSED BODIES
GRINDING OF PRESSED BODIES IN CONE GRINDER ROTATING AT 60–100 RPM. TO OBTAIN GROUND GRAPHITE
SIFTING OF GROUND GRAPHITE TO OBTAIN GRAIN SIZE DISTRIBUTION OF 90 –400 Å, WITH OPTIMUM OF ABOUT 300 µ
OR
MIXING OF 42% BY WEIGHT OF SIFTED GROUND GRAPHITE WITH 58% BY WEIGHT OF POWDERED COPPER
MIXING OF 42% BY WEIGHT OF SIFTING GROUND GRAPHITE WITH 58% BY WEIGHT OF POWDERED COPPER AND 7% BY WEIGHT OF PITCH
PRESSING OF RESULTING MIXTURE AT ABOUT 4 t/cm2
PRESSING OF RESULTING MIXTURE AT ABOUT 4 t/cm2
SINTERING OF RESULTING PRESSED BODY AT ABOUT 750°C
SINTERING OF RESULTING PRESSED BODY AT ABOUT 550°C

Leaf graphite is compressed to form bodies having a gross density of at least 1.5 g/cm³. The bodies are then comminuted in a cone-mill to obtain a raw graphite powder whose particles are of essentially ball-shaped configuration and which is then screened or sifted to have a particle size distribution between 50 and 400 microns. The sifted powder is admixed with a predetermined percentage by weight of powdered copper and the mixture compressed to form a brush body, which is sintered to obtain a finished metal-carbon brush.

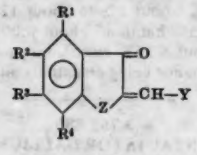
3,765,882

HETEROCYCLIC PHOTOCONDUCTOR CONTAINING O, S OR SE

Rein Virkhaus, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,303
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5 13 Claims

Compounds useful in electrophotography as part of photoconductive elements are disclosed having the general formula:



wherein Z is a sulfur, oxygen or selenium hetero atom and R^1 through R^4 each represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group or a halogen atom and Y represents the group $-(CH=CH)_n-R$ in which n equals 0, 1 or 2 and R is an aryl radical.

3,765,883

ORGANIC PHOTOCONDUCTORS SENSITIZED WITH FREE RADICAL LIBERATORS AND ORGANOMETALLIC COMPOUNDS

Ichiro Endo, Tokyo, and Teruo Yamanoughi, Fujisawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1971, Ser. No. 111,626
Claims priority, application Japan, Apr. 2, 1970, 45/9836; Apr. 2, 1970, 45/9838; Apr. 14, 1970, 45/31850
Int. Cl. G03g 5/06
U.S. Cl. 96—1.6 38 Claims

A photosensitive material suitable for electrophotography is composed mainly of a free radical former capable of producing free radical by a radiation energy (F) and an organic photoconductive material (OPH) treated with a radiation energy in the presence of an organometallic compound (OM). If desired, a dye base compound or an organic colorization component may be added thereto. The photosensitive material may be produced by applying a radiation energy to a formulation containing F, OPH and OM.

3,765,884

1-SUBSTITUTED-2-INDOLINE HYDRAZONE PHOTOCONDUCTORS

Michael D. Shea, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 6, 1971, Ser. No. 160,064
Int. Cl. G03g 5/06
U.S. Cl. 96—1.6 6 Claims

1-Substituted-2-indoline hydrazones are useful as photoconductors.

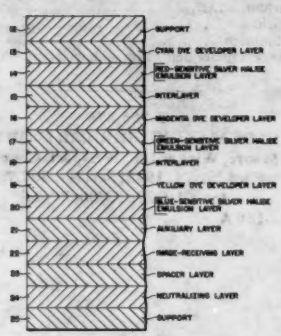
3,765,885

NEUTRALIZING LAYER FOR COLOR DIFFUSION TRANSFER FILM

Stanley F. Bedell, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 3, 1972, Ser. No. 214,746
Int. Cl. G03c 7/00
U.S. Cl. 96—3 19 Claims

Novel photographic products for use in diffusion transfer systems for forming visible images, particularly systems for forming color images viewable, without separation as color reflection prints, which products include a neutralizing layer for lowering the environmental pH after application of an



aqueous alkaline processing fluid, the neutralizing layer comprising a graft copolymer of an acid moiety grafted onto a polymeric backbone.

3,765,886

IMAGE TRANSFER SYSTEMS WITH 'ONIUM INDOPHENOXIDE IMAGE DYES

Walter Monroe Bush, Victor, and John Warburton Gates, Jr., Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1971, Ser. No. 169,667
Int. Cl. G03c 5/54, 7/00, 7/34
U.S. Cl. 96—3 27 Claims

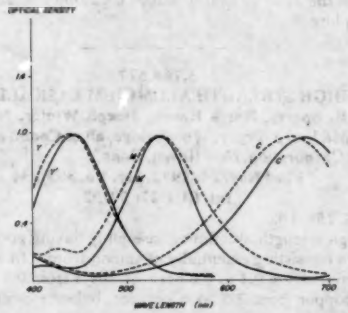


Image transfer systems and processes are disclosed wherein an 'onium indophenoxide image dye is formed during processing after imagewise exposure. In one embodiment, the image transfer systems contain a silver halide emulsion having associated therewith an immobile color coupler which is reacted with p-aminophenol to form a diffusible indophenol which is reacted with an 'onium compound to form an 'onium indophenoxide image dye. In another embodiment, the image transfer system contains a silver halide emulsion having associated therewith a mobile color coupler which is immobilized imagewise during development with portions of the mobile coupler diffusing to an image-receiving layer where it is

reacted with oxidized p-aminophenol in association with an onium compound to provide an 'onium indophenoxide image dye.

3,765,887

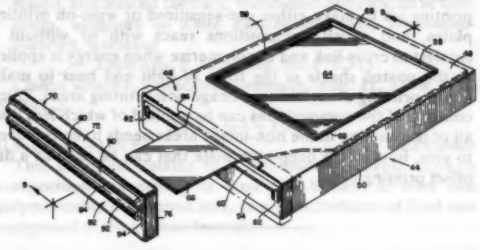
FILM ASSEMBLAGE FOR COLOR DIFFUSION TRANSFER

Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 203,731, Dec. 1, 1971, which is a continuation of Ser. No. 159,254, July 2, 1971, Pat. No. 3,689,262, which is a continuation-in-part of Ser. No. 39,646, May 22, 1970, Pat. No. 3,594,165, which is a continuation-in-part of Ser. No. 815,585, April 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 728,535, May 13, 1968, abandoned. This application Apr. 24, 1972, Ser. No. 246,563

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **20 Claims**



A photographic film pack or magazine containing all of the materials and components required to produce a plurality of diffusion transfer process color reflection prints. The pack includes a plurality of diffusion transfer process color film units each comprising a photosenstive laminate including as essential layers, in order, a dimensionally stable transparent support layer, a layer adapted to receive a diffusion transfer process dye image-forming material diffusible thereto, an opaque layer, a photosensitive silver halide layer having an associated diffusion transfer process dye image-forming material; a transparent dimensionally stable support sheet superposed substantially coextensive with the surface of the laminate opposite the transparent support; and a rupturable container, filled with a liquid processing composition including an opacifying agent, secured to the exterior of the laminate and transparent sheet adjacent a leading edge of either or both the external transparent layer and sheet in position to discharge its liquid contents between the transparent sheet and the laminate by and in response to the application of compressive pressure to the container.

The film pack also comprises a container including a forward wall formed with a light transmitting opening and holding a plurality of film units arranged in stacked relation with the transparent sheets facing the forward wall in position for exposure to light admitted by the opening, and an opening at one end through which exposed film units can be withdrawn, one at a time, to effect the processing thereof. The container also includes pressure-applying means associated with the withdrawal opening for discharging and spreading the liquid contents of the container of each exposed film unit as the latter is withdrawn from the film pack container. A dark slide with a leader projecting beyond the pressure-applying means is positioned between the exposure opening and the foremost film unit to prevent exposure thereof and is connected by a leader to the foremost film unit which, in turn, is connected to the next succeeding film unit, and so forth, to provide for withdrawal and processing of all film units.

3,765,888

PHOTOSENSITIVE COMPOSITIONS AND A METHOD FOR RECORDING AND DIRECTLY DEVELOPING A COLOURED IMAGE

Reiji Sano; Susumu Yoshimura; Shirow Asakawa, and Katsue Hasegawa, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 73,266, Sept. 17, 1970, abandoned. This application June 6, 1972, Ser. No. 286,540

Int. Cl. G03c *1/70, 1/58*

U.S. Cl. 96—27 R **7 Claims**

A method and a photo-sensitive composition for recording and directly developing a coloured image, including a photosensitive material A, a solvent B in which the material A is soluble and a third material C which forms a charge-transfer complex with the solvent B when the solvent is liberated from the material A. When the photo-sensitive composition applied on a substrate is exposed to an actinic light such as an ultraviolet ray, a cross-linking or polymerization reaction takes place in the material A which consequently is insolubilized in the solvent B. Accordingly, the solvent B is liberated from the photo-sensitive material A and forms a charge-transfer complex with the material C to develop a colour.

3,765,889

SILVER TRANSFER DIFFUSION PROCESS

Richard W. Young, Norfolk, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 1, 1971, Ser. No. 130,383

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **24 Claims**

Silver transfer images having improved highlights are obtained by using silver halide emulsions wherein the silver halide is substantially completely in the form of grains having a diameter of at least 0.5 micron.

3,765,890

ORGANIC HYDROGEN PEROXIDE ADDITION COMPOUNDS FOR VESICULAR IMAGE FORMATION PROCESSES

Edith Weyde, Kurten; Maria Scheibitz; Rudolf Meyer, and Reinhart Matejec, all of Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 15, 1971, Ser. No. 198,947

Claims priority, application Germany, Nov. 17, 1970, P 20 56 359.1

Int. Cl. G03c *5/26*

U.S. Cl. 96—50 **4 Claims**

Photographic images are produced by imagewise decomposition of addition compounds of hydrogen peroxide with organic compounds, the image being made visible, either physically by developing the gas bubbles formed during decomposition, or chemically by using the oxygen formed during decomposition for a color-forming reaction.

3,765,891

PROCESS FOR DEVELOPING PHOTOGRAPHIC ELEMENTS

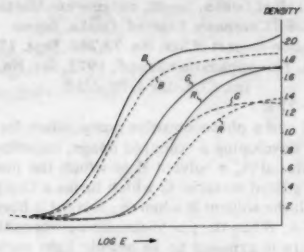
William Blair Travis, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1972, Ser. No. 256,071

U.S. Cl. 96—55 **40 Claims**

Improved processes are disclosed for providing an image record in a photographic element which comprises a support and at least one layer thereon containing a silver halide emulsion which has associated therewith an image dye-providing color coupler. Generally, the process comprises the improve-

ment wherein a photographic element containing a silver halide and an imagewise distribution of metallic silver is con-



tacted in the presence of a color-developing agent with an amplifier composition which contains a cobalt (III) complex.

3,765,892

VISCOUS DEVELOPER FOR SILVER HALID DIFFUSION TRANSFER PROCESSES

Haruhiko Iwano; Katsumi Hayashi, and Sachio Matsushita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 17, 1971, Ser. No. 172,596

Claims priority, application Japan, Aug. 17, 1970, 45/71961

Int. Cl. G03c *5/30*, *5/54*, *5/38*

U.S. Cl. 96—66 R **12 Claims**

There is provided a viscous developer for a diffusion transfer process, which contains (a) a developing agent, (b) a silver halide solvent, (c) a thickening agent and (d) an alkali agent, said developing agent represented by the formula:

wherein R is a member selected from the group consisting of an ethyl group, a propyl group, and a butyl group.

3,765,893

POLYMERIC ACID CONTAINING GELATIN INTERLAYER FOR COLOR PHOTOGRAPHIC FILM

Karl Lohmer, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 10, 1972, Ser. No. 252,025

Claims priority, application Germany, May 12, 1971, P 21 23 456.0

Int. Cl. G03c *1/76*

U.S. Cl. 96—74 **2 Claims**

Color-photographic multi-layer materials having red-sensitized, green-sensitized, and blue-sensitized silver halide emulsion layers, each emulsion layer containing a color coupler, and gelatin interlayers for preventing undesirable coupling of developer oxidation products diffused in adjacent silver halide emulsion layers, contain in the gelatin interlayers 5 to 30 percent by weight of polyerms which contain acid groups. These interlayers are more effective in preventing the diffusion of developer oxidation products, as compared with pure gelatin interlayers. Thus it is possible to have interlayers of half the thickness of conventional interlayers. The materials have improved non-curling properties.

3,765,894

ELEVATED IMAGE PRINTING PLATE

Ibert Mellan, Flushing, N.Y., assignor to Polychrome Corporation, Yonkers, N.Y.

Continuation-in-part of Ser. No. 112,454, Feb. 3, 1971, abandoned, which is a continuation of Ser. No. 627,615, April 3, 1967, abandoned. This application Aug. 5, 1971, Ser. No. 169,550

Int. Cl. G03c *1/94*

U.S. Cl. 96—86 **5 Claims**

There are disclosed herein photosensitive-thermosensitive compositions of polyvinyl alcohol polymers and polyvinyl acetate polymers having incorporated therein a photo-responsive sensitizer, which compositions are coated onto base surfaces such as sheets of the materials commonly used in the printing art to make either pre-sensitized or wipe-on printing plates, and which compositions react with or without a catalyst to cross-link and copolymerize when energy is applied to the coated sheets in the form of light and heat to make image-printing areas and non-image non-printing areas. Thick coatings of the compositions can be applied of which less than all of the coating in the non-image areas needs to be removed to give, in effect, a deep-etch plate that can be used as a dry offset printing plate.

3,765,895

PHOTOGRAPHIC PRINT-OUT COMPOSITION CONTAINING A COLORLESS STABLE-FREE RADICAL PRECURSOR AND A PHOTOACTIVATOR

Charles J. Fox, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,831

Int. Cl. G03c *1/00*, *1/52*

U.S. Cl. 96—88 **6 Claims**

Photographic compositions including the combination of a substantially colorless stable-free radical precursor and at least one photoactivator which reacts with the free radical precursor upon exposure to activating rays, produce a colored, stable-free radical in the exposed areas directly on exposure. These printout elements can be carried on a support to form photographic printout elements.

3,765,896

PHOTOGRAPHIC ELEMENT CONTAINING A LIGHT SENSITIVE PHOTOBLEACHANT AND A COLORED STABLE 2-AMINO-ARYL-7-OXYL-3-OXIDE-2-IMIDAZOLINE FREE RADICAL

Charles J. Fox, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,830

Int. Cl. G03c *1/72*, *1/68*

U.S. Cl. 96—89 **8 Claims**

Direct-positive photographic compositions are disclosed, the compositions including a radiation-sensitive photobleachant and a colored, stable 2-amino-aryl-1-oxyl-3-oxide-2-imidazoline free radical. When the compositions are exposed to activating radiation for the photobleachant, the colored stable-free radical is bleached or decolorized such that the exposed areas of the composition exhibit lower density and/or different coloring than the unexposed areas. Direct positive images are produced thereby. These compositions can be carried on a support to prepare photographic elements.

3,765,897

PROCESS OF INCORPORATING ADDITIVES INTO PHOTOGRAPHIC EMULSIONS

Fritz Nittel, Cologne, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 7, 1971, Ser. No. 187,554

Claims priority, application Germany, Oct. 9, 1970, P 20 49 689.3

Int. Cl. G03c 1/40

U.S. Cl. 96—100 10 Claims

The emulsification of additives into a photographic emulsion is stabilized by combining the additive with mono aryl esters or mono cycloalkyl esters of a succinic acid that has a long chained aliphatic substituent.

3,765,898

PHOTOPOLYMERIZABLE COPYING COMPOSITION AND COPYING MATERIAL PRODUCED THEREWITH

Sigrid Bauer, Hahn/Taunus; Richard Brahm, Wiesbaden-Kastel, and Roland Dietrich, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

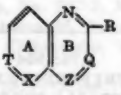
Filed Aug. 9, 1971, Ser. No. 170,311

Claims priority, application Germany, Aug. 11, 1970, P 20 39 861.2

Int. Cl. G03c 1/70

U.S. Cl. 96—115 P 13 Claims

This invention relates to a photopolymerizable copying composition comprising at least one binder, at least one polymerizable compound and, as a photoinitiator at least one compound of the general formula I



I

in which:

Z and Q are different from one another and each represents either a nitrogen atom or the group C-R′,

X and T are the same or different and represent a nitrogen atom or the group C-R″,

R and R′ are the same or different and represent aliphatic, aromatic or heterocyclic groups and

R″ represents hydrogen or an organic group, the nucleus A carrying a further group of the significance of R″ or an annellated benzene ring.

3,765,899

LIGHT-SENSITIVE SUPER-SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Shui Sato, Tokyo; Eiichi Sakamoto, Hanno; Yuji Watanabe, Saitama-ken; Kaiichiro Sakazume, and Tokuzo Kaneko, both of Tokyo, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

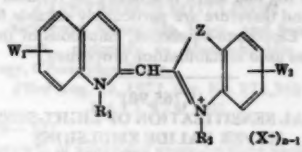
Continuation-in-part of Ser. No. 18,622, March 11, 1970, abandoned. This application July 11, 1972, Ser. No. 270,830

Claims priority, application Japan, Mar. 14, 1969, 44/18898

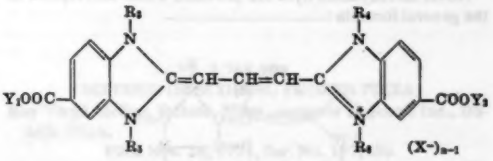
Int. Cl. G03c 1/14

U.S. Cl. 96—124 3 Claims

A green-sensitive supersensitizer for light-sensitive silver halide photographic emulsions comprises a combination of at least one dye represented by the formula:



wherein R_1 is a lower alkyl group, R_2 is a sulfoalkyl group, a carboxyalkyl group or a derivative of any of said groups, W_1 and W_2 are individually a hydrogen atom or a lower alkyl group, Z is a sulfur or selenium atom, X^- is a negative group, and *n* is 1 or 2 and at least one dye represented by the formula:



wherein R_3 and R_4 are individually a lower alkyl group or a substituted alkyl group, R_5 and R_6 are individually a lower alkyl group, a hydroxyalkyl group, a sulfoalkyl group or a derivative of any of said groups, Y_1 and Y_2 are individually a n-propyl, iso-propyl, n-butyl, iso-butyl or phenyl group, X^- is a negative group, and *n* is 1 or 2.

3,765,900

SPECTRALLY SENSITIZED SILVER HALIDE EMULSIONS

Henri Depoorter, Mortsel, and Theofiel Hubert Ghys, Kontich, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

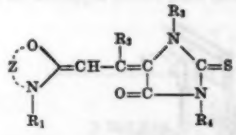
Filed Jan. 20, 1971, Ser. No. 108,163

Claims priority, application Great Britain, Feb. 17, 1970, 7,586/70

Int. Cl. G03c 1/22

U.S. Cl. 96—140 6 Claims

Novel merocyanine dyes are provided which correspond to the general formula :



wherein :

Z represents the atoms necessary to close an oxazole nucleus,

R_1 stands for sulphatoalkyl, phosphonoalkyl or AWNHVB wherein each of W and V represents carbonyl, sulphonyl or a single bond, at least one of W and V being sulphonyl, A stands for alkylene and B stands for hydrogen, an alkyl group or an amino group, B not being hydrogen when V stands for carbonyl or sulphonyl, and

each of R_2, R_3 and R_4 stands for hydrogen, an aliphatic group or an aryl group one of R_3 and R_4 being an aliphatic group or aryl group substituted by sulpho, carboxy or alkoxycarbonyl,

the acidic groups being in the free acid form or salt form. These merocyanine dyes can be used for the spectral sensitization of light-sensitive silver halide emulsions. They do not enhance the fog and leave practically no residual stain after processing and therefore are particularly suitable for the sensitization of Lippmann-emulsions, emulsions of the lith-type and emulsions used in stabilisation processing.

3,765,901

SPECTRAL SENSITIZATION OF LIGHT-SENSITIVE SILVER HALIDE EMULSIONS

Jozef Remy Schellekens, Wilsele; Theofiel Hubert Ghys, Kontich, and Henri Depoorter, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

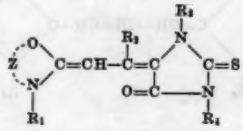
Filed Jan. 20, 1971, Ser. No. 108,164

Claims priority, application Great Britain, Feb. 17, 1970, 7,585/70

Int. Cl. G03c 1/22, 1/06

U.S. Cl. 96—140 **11 Claims**

Novel merocyanine dyes are provided which correspond to the general formula :



wherein :

Z stands for the atoms necessary to close an oxazole nucleus,

R_1 stands for an aliphatic or aromatic group,

R_2 stands for hydrogen, an alkyl group, an aralkyl group, an aryl group or a cycloalkyl group, and

each of R_3 and R_4 stands for alkoxycarbonylalkyl.

These merocyanine dyes can be used for the spectral sensitization of light-sensitive silver halide emulsions. They do not enhance the fog and leave practically no residual stain after processing and therefore are particularly suitable for the sensitization of Lippmann-emulsions, emulsions of the lith-type and emulsions used in stabilisation processing.

3,765,902

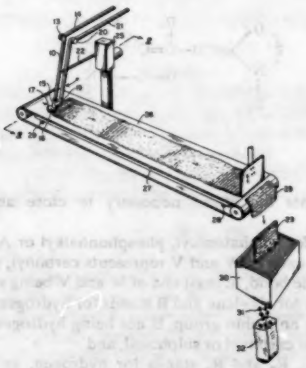
METHOD FOR MAKING A MARBLED MEAT PET FOOD

Wayne M. Charter, Crystal Lake, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

Filed July 22, 1970, Ser. No. 57,092

Int. Cl. A23k 1/00

U.S. Cl. 99—2 R **1 Claim**



An apparatus is described for producing a substantially solid semi-moist animal food resembling marbled meat. The apparatus consists of a pipe closed at one end and having a number of holes immediately adjacent to the closed end. A second pipe completely encloses the first pipe.

A process is described for producing a substantially solid semi-moist animal food resembling marbled meat. In the process, a white-colored semi-moist animal food material is extruded into one of the pipes of the above apparatus and a red-colored semi-moist animal food material is extruded into the other pipe. A plurality of small strands of the material in the inner pipe is injected into the material in the larger pipe and this mixture is then extruded in a back and forth motion onto a moving conveyor.

3,765,903

ISOMERISED HOP EXTRACT

Brian James Clarke, Bentleigh; Robert Peter Hildebrand, Mount Waverley; David George Lance, Greensborough, and Alexander William White, Elsternwick, Victoria, all of Australia, assignors to Carton and United Breweries Limited, Carlton, Victoria, Australia

Filed Aug. 5, 1971, Ser. No. 169,549

Claims priority, application Australia, Sept. 17, 1970, 2573; June 24, 1971, 5303

Int. Cl. C12c 9/02

U.S. Cl. 99—50.5 **10 Claims**

A process for the preparation of an isomerised hop extract for use in the flavouring of food or beverages which comprises adding to a solution of humulones or their salts a metal ion of calcium, magnesium, nickel, manganese or zinc, which metal ion forms with the humulones a metal ion-humulone complex which then precipitates from the solution. The metal ion-humulone complex is then heated in solid or paste state or in suspension or dissolved in an organic solvent to form a metal ion-isohumulone complex in high yield. The metal ion-isohumulone complex is substantially insoluble and can be used as a bittering additive, without regeneration to a soluble salt of isohumulone, by finely grinding such metal ion-isohumulone complex.

3,765,904

METHODS OF PREPARING EXTRACTS FROM VEGETABLE PRODUCTS

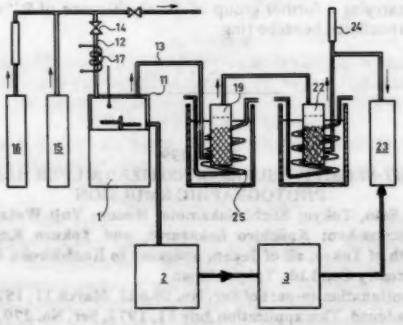
Henri de Roissart, Grenoble, and Conrad Johannes, Meylan, both of France, assignors to l'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Feb. 11, 1971, Ser. No. 114,416

Claims priority, application France, Feb. 19, 1970, 7005941

Int. Cl. A23l 1/08

U.S. Cl. 99—71 **10 Claims**



A method of recovering aromatic vapors released from vegetable products during comminution. A gaseous mixture of an easily condensable gas and a gas that is difficult to con-

dense is used to sweep away aromatic vapors, the gaseous mixture then being cooled to condense said easily condensable gas and said aromatic vapors in a snow-like structure of said easily condensable gas.

3,765,905
CHEESE PRODUCT
Robert L. Kasik, Oaklawn, and Anthony J. Luksas, Chicago, both of Ill., assignors to Beatrice Foods Co., Chicago, Ill.
Continuation-in-part of Ser. No. 824,259, May 13, 1969, Pat. No. 3,667,968, which is a continuation-in-part of Ser. No. 824,250, May 13, 1969, Pat. No. 3,674,508.
Filed Feb. 16, 1971, Ser. No. 115,753. The portion of the term of this patent subsequent to July 4, 1969 has been disclaimed.
Int. Cl. A23c *19/02, 19/12;* A23l *1/26*
U.S. Cl. 99—140 R 26 Claims

A cheese flavor is provided by adding a portion of natural cheese in the fermentation medium either prior to, during or after fermentation. The fermentation medium comprises a protein and carbohydrate which has been innoculated with an organism from the Genus Bacillus and an organism from the Genus Streptococcus. Fermentation is carried out in an airtight fermenter.

3,765,906
WATER SOLUBLE MONASCUS PIGMENT
Yuzo Yamaguchi, No. 32, Hakuraku-cho, Kanagawa-ku, Yokohama-shi, Kanagawa-ken; Hideichi Ito, No. 15-5, Shiba 1-chome, Mimato-ku, Tokyo; Susumu Watanabe, No. 87-6, Minami-Honjuku-cho, Asahi-ku, Yokohama-shi, Kanagawa-ken; Toshio Yoshida, No. 942-2, Matsumi-cho, 3-chome, Kanagawa-ku, Yokohama-shi, Kanagawa-ken, and Akira Komatsu, No. 34, Chihaya-sho, 4-chome, Toshima-ku, Tokyo, all of Japan
Filed Mar. 28, 1972, Ser. No. 238,949
Int. Cl. A23l *1/26*
U.S. Cl. 99—148 8 Claims

A non-soluble monascus pigment, containing principally monascorubrin is first obtained by fermenting a culture of Monascus purpureus or Monascus anka, and is then reacted with one or more members selected from water soluble proteins, water soluble peptides and amino acids to yield the soluble pigment. Alternately, the soluble pigment is produced by fermenting the above mentioned microorganisms in a culture medium containing one or more members selected from water soluble proteins, water soluble peptides and amino acids.

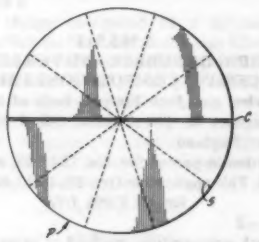
3,765,907
BLOCKING MICROLEAKS IN FLEXIBLE FOOD PACKAGES
John J. Killoran, Worcester, and Frank J. Rubinate, Needham, both of Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed July 22, 1971, Ser. No. 165,387
Int. Cl. B65b *55/22*
U.S. Cl. 99—171 LP 7 Claims

Microleaks in flexible packages constituting an avenue for microbiological contamination of the contents are blocked by immersion of the package in an elastomer polymer solution having a viscosity of 10 to 1000 centipoises which solution enters into the microleak and upon removal of the solvent deposits an elastomer plug which completely and effectively closes the microleak.

3,765,908
TREATING FOOD WITH POLYPEPTIDE HADDOCK EXTRACT TO PREVENT THE OUTGROWTH OF CLOSTRIDIUM BOTULINUM
John T. R. Nickerson, Somerville, Mass., and Janusz M. Zak, Seattle, Wash., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Aug. 12, 1971, Ser. No. 171,350
Int. Cl. A23l *3/00*
U.S. Cl. 426—321 4 Claims

The outgrowth of anaerobic spore-forming bacteria in foods is prevented by adding to the food a mixture of polypeptide having a molecular weight between 1,100 and 1,400 and then heating the mixture to a temperature between about 200° to 270° F. for a period between about 1.5 minutes to 30 minutes. The polypeptide materials reduce the heating requirements needed to prevent outgrowth of the bacteria having a heat resistance equivalent to *Clostridium Botulinum*, type E.

3,765,909
METHOD OF SCORING FROZEN PIZZA
Roy Virgil Moline, Duluth, Minn., assignor to Jeno's Inc., Duluth, Minn.
Filed Nov. 10, 1971, Ser. No. 197,456
Int. Cl. A23l *1/16*
U.S. Cl. 99—192 R 7 Claims

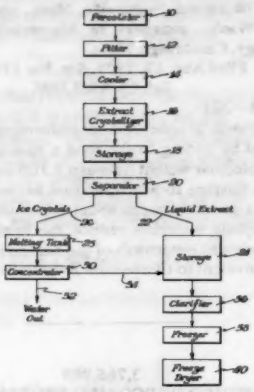


A frozen pizza food product and method of processing it, including a machine for performing the process. The pizza is sectioned, and the sections scored while it is at a temperature of 20° to 24° F. Die members, each carrying a cutting knife and a plurality of scoring blades, automatically processes the frozen pizza as the conveyor moves them through a die stamping unit.

3,765,910
METHOD OF REMOVING UNDESIRABLE SOLIDS FROM COFFEE EXTRACT
Richard A. Chaplow, and Ronald A. Hodgman, both of Quebec, Canada, assignors to General Foods, Limited, Toronto, Ontario, Canada
Filed Sept. 8, 1969, Ser. No. 855,970
Int. Cl. B01d *9/04;* A23f *1/08*
U.S. Cl. 99—199 C 10 Claims

Coffee extract is freeze concentrated in a crystallizer of the scraped wall type, having low residence time and a maximum delta T, which generates fine ice crystals and is not susceptible to clogging. The effluent slurry from the crystallizer is separated into its components in a basket-type batch centrifuge, which also is not susceptible to clogging. the separated ice from the centrifuge is melted, concentrated and added back to the mother liquor or concentrated liquid extract ef-

fluent of the centrifuge. Any insolubles present in the concentrated extract are then easily removed by clarification in a



desludger type centrifuge. The clarified extract is frozen and freeze dried into a clean product, free of any undesirable insolubles.

3,765,911

PROCESSING OF RUBBER AND THE LIKE, AND TO PROCESSING COMPOSITIONS THEREFOR

Ernest Knowles, and Jack Fixman, both of Manchester, England, assignors to The London Oil Refining Company, Manchester, England

Continuation-in-part of Ser. No. 752,105, Aug. 9, 1968, abandoned. This application Oct. 27, 1970, Ser. No. 84,547

Int. Cl. C09k *3/18*

U.S. Cl. 106—2 **12 Claims**

An anti-tack composition, method of using same, and articles of manufacture including same are provided. The composition consists essentially of a soap constituent, a synthetic detergent and a colloidal clay constituent. Each of the constituents has specific characteristics and relationships with respect to each other and are established in a water base, stable homogenous colloidal dispersion. Any substrate composed of a material having glutinous or adhesive surface properties such as natural and synthetic rubber, plastics, asbestos, bituminous and asphaltic compositions may be coated with the anti-tack composition of the disclosure.

3,765,912

MGO-SIC LOSSY DIELECTRIC FOR HIGH POWER ELECTRICAL MICROWAVE ENERGY

Louis E. Gates, Jr., Inglewood, and William E. Lent, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 814,830, April 9, 1969, Pat. No. 3,634,566, and a continuation-in-part of Ser. No. 586,649, Oct. 14, 1966, Pat. No. 3,538,205. This application Jan. 7, 1971, Ser. No. 104,810

Int. Cl. C04b *35/04*, *35/56*; **H01p** *1/22*

U.S. Cl. 106—44 **2 Claims**

A lossy dielectric for dissipating high power wave energy on the order of 100 to 1,800 watts comprised of a magnesia matrix press-formed of a dry blended mix of calcined magnesium oxide and 1 to 80 percent by weight silicon carbide.

3,765,913

PHOTOTROPIC GLASS

Yoshio Murakami, Itami, and Makoto Kume, Amagasaki, both of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 821,978, May 5, 1969, abandoned. This application Jan. 25, 1972, Ser. No. 220,715

Claims priority, application Japan, May 17, 1968, 43/33331; July 10, 1968, 43/48699

Int. Cl. C03c *3/26*, *3/14*, *3/08*

U.S. Cl. 106—54 **2 Claims**

A transparent and durable phototropic glass comprising a borosilicate glass body containing therein microcrystals of silver halide, copper oxide and lanthanum oxide, and process for making the phototropic glass which comprises melting a batch for the said glass body, forming and cooling the molten glass, heat treating said glass to cause the silver halide to crystallize, and cooling the glass.

3,765,914

SILICEOUS BONDED REFRACTORY

Richard G. LaBar, Youngstown, N.Y., and George R. Hansen, Edison, N.J., assignors to The Carborundum Company, Niagara Falls, N.Y.

Filed June 28, 1971, Ser. No. 157,624

Int. Cl. C04b *35/48*

U.S. Cl. 106—57 **4 Claims**

The strength and density of fired articles made from oxidic refractories, such as those with high contents of alumina, zirconia, magnesia, silica, chromia and the like, are improved by the addition of about ½ to 3 weight percent of finely divided silicon metal. When the refractory mixtures are fired at 2,200°-3,200 F in an oxidizing atmosphere, the silicon reacts with oxygen and other constituents of the mix to form a strong refractory siliceous bonding network.

3,765,915

BETA-ALUMINA POLYCRYSTALLINE CERAMICS

James H. Duncan, and Brian K. Hick, both of London, England, assignors to British Railway Board, London, England

Filed Jan. 27, 1972, Ser. No. 221,386

Claims priority, application Great Britain, Feb. 3, 1971, 3,815/71

Int. Cl. C04b *35/10*; **H01m** *11/00*; **B01k** *3/12*

U.S. Cl. 106—73.4 **10 Claims**

A method of preparing a Beta-alumina polycrystalline ceramic comprises firing a mix consisting essentially of by weight:

Li_2O – 0.7 – 1.5%
Na_2O – 8.3 – 8.9%
MgO – 0.5 – 2.0%
Al_2O_3 – balance.

3,765,916

PROCESS FOR MAKING NONCORROSIVE CEMENT WITH CONTROLLED SETTING TIME

Rene-Marie Berthier, 4, rue Wilfried Killian, Grenoble, France

Continuation-in-part of Ser. No. 748,638, July 30, 1968, abandoned. This application Feb. 9, 1971, Ser. No. 114,092

Int. Cl. C04b *7/02*, *7/54*

U.S. Cl. 106—102 **11 Claims**

Finely divided water is added to finely powdered Portland cement during or after milling of the cement and while subjecting the cement to an active mixing action to bind the water intimately and uniformly with the cement particles. The amount of water intimately bound with the cement particles is at least several thousandths and not exceeding 10 thousandths of the mass of the cement. The water thus added retards and controls the setting of the cement when subsequently used in making concrete to provide a period of the order of one to three hours before the beginning of substantial hardening.

3,765,917

SHAPED BODY OF GELATIN CONTAINING AMYLOSE AND/OR AMYLITOL

Hiromi Hijiya, and Mamoru Hirao, both of Okayama, Japan, assignors to Ken Hayashibara, Okayama-ken, Japan

Filed Nov. 17, 1971, Ser. No. 199,653

Claims priority, application Japan, Nov. 24, 1970, 45/102685; Dec. 5, 1970, 45/107221

Int. Cl. C08h *7/00, 7/34*

U.S. Cl. 106—126 9 Claims

Films or sheets, capsules, sponges, fibers, and other shaped bodies of gelatin have improved mechanical properties when containing 10 to 60 parts by weight of amylose and/or amylitol per 100 parts of the gelatin. They may further contain glycerol or other polyhydric alcohols as plasticizers in amounts effective to improve mechanical and optical properties of the bodies.

3,765,918

BLENDS OF XANTHOMONAS AND GUAR GUM

Wesley A. Jordan, and Walter H. Carter, both of Minneapolis, Minn., assignors to General Mills Chemicals, Inc., Minneapolis, Minn.

Filed July 17, 1972, Ser. No. 272,710

Int. Cl. C08b *25/00*

U.S. Cl. 106—205 10 Claims

A blend of xanthomonas gum and guar gum which upon hydration exhibits viscosities in excess of the additive viscosities of the components. The xanthomonas gum in the blend is pretreated by heating.

3,765,919

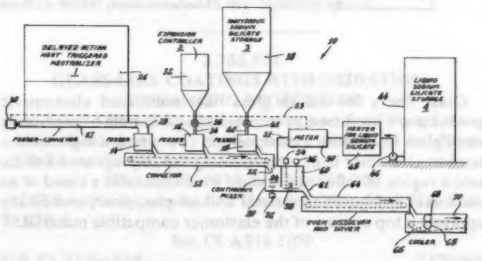
SYNTHETIC LIGHT-WEIGHT MATERIAL AND PROCESS AND SYSTEM FOR MANUFACTURING SAME

Lawrence F. Gelbman, 86 Hamilton Ave., Yonkers, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,037

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B 13 Claims



Synthetic light-weight material suitable for use in building, construction, building products, packaging, insulation, soil conditioning, and the like, formed of four ingredients in selective quantities depending upon the desired bulk density of the final product, the four ingredients being a delayed-action, heat-triggered neutralizer, an expander controller, anhydrous sodium silicate, and liquid sodium silicate; the expander controller being omittable when extremely light bulk density of less than about 1.5 lb. per cu. ft. is desired. In one final form, the particles are extremely expanded to a low bulk density for use as a very light-weight aggregate for mixture with cement to form light building blocks, having excellent sound-absorbing characteristics, to form fire-resistant partitions, and fire-resistant or sound-absorbent coatings. In another form, the bulk density of the particle aggregate is retained at a high value for ease and economy of shipment to the user's site where it is subsequently passed through a heat expansion to drastically reduce its density to the desired low value for use. The process steps and system of equipment enable the amount of expander controller utilized to be varied dependent upon the severity of the subsequent aggregate-cement mixing so that the light particles are resistant to abrasive and commingling treatment during the mixing.

3,765,920

BLOATED FLY ASH AGGREGATES

Clyde W. Humphrey, Wakeman, Ohio, assignor to William J. Freeman and Reese Taylor, Akron, Ohio, part interest to each

Filed Mar. 1, 1972, Ser. No. 231,022

Int. Cl. C08h *17/04*

U.S. Cl. 106—288 B 9 Claims

Bloated fly ash aggregates suitable for use in concrete, asphalt and the like are produced by: homogeneously admixing with fly ash, first an aqueous solution of a alkali compound such as ammonium hydroxide, and then an aqueous dispersion of a water-soluble carbohydrate; forming the resulting admixture into aggregates, drying the aggregates; and finally firing the aggregates at a temperature causing fusion and bloating of the aggregates.

3,765,921

PRODUCTION OF CALCINED CLAY PIGMENT FROM PAPER WASTES

Victor Puskar, Piscataway, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge, N.J.

Filed Mar. 13, 1972, Ser. No. 234,318

Int. Cl. C08h *17/06*

U.S. Cl. 106—288 B 10 Claims

Papermaking sludge composed of a mixture which is predominantly cellulosic fiber and kaolin clay filler or pigment is dried and the fiber is removed by igniting it under controlled temperature conditions. The ash is pulverized, slurried in water and ground with an abrasive grinding medium. A fine size fraction of ground ash is dried, pulverized and calcined under controlled temperature conditions. A fine size, high brightness, low abrasion calcined clay pigment, suitable for reuse by a paper mill, is obtained.

3,765,922

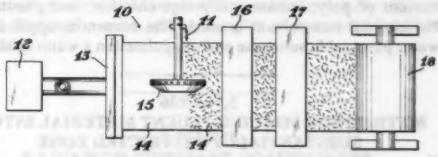
METHOD OF FORMING FLOCKED ARTICLES

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 29, 1971, Ser. No. 157,828

Int. Cl. B44c *1/08*

U.S. Cl. 117—16 4 Claims



A flocked article and method for making the same comprising centrifugally extruding thermoplastic strands or filaments of any desired thickness and length, and then impinging the rapidly moving strands or filaments on a substrate base of any desired material or combination of materials immediately after said strands or filaments are freed from an extrusion die. Direct fusion bonding of the strands or filaments to the substrate may be achieved, or bonding of the strands or filaments may be obtained by applying an adhesive or hot melt layer to the substrate base prior to impinging them thereon, or by using a heat softened thermoplastic substrate. Unique flocking

apparatus is obtained by using a centrifugal extruder in combination with other means of forming the substrate base. Also, a novel flocked article may be achieved by the penetration of one end of the strands or filaments into the matrix of the substrate base prior to their bonding or fusion therewith.

3,765,923

PROCESS AND COMPOSITION FOR BLAST-CLEANING AND CORROSION-PROTECTING METAL SURFACES

Bent Bender-Christensen, Gentofte, Denmark, assignor to J. C. Hempel's Skibsfarve-Fabrik A/S, Lyngly, Denmark

Filed Dec. 13, 1971, Ser. No. 207,556

Claims priority, application Great Britain, Dec. 14, 1970, 59,328/70

Int. Cl. B44d *1/02*

U.S. Cl. 117—26 **20 Claims**

A process and composition for blast-cleaning metal surfaces, particularly steel surfaces, and simultaneously depositing a corrosion protective metal thereon. Abrasive particles carrying a protective metal, especially zinc, at their outer surface are used as the blast abrasive. The protective metal is bound to the abrasive particles by means of a binder.

3,765,924

FINISHING PROCESS AND COMPOSITION

James M. Craven, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 14,632, Feb. 26, 1970, abandoned. This application June 29, 1971, Ser. No. 158,092

Int. Cl. B44d *1/44*; P09d *3/80*

U.S. Cl. 117—63 **6 Claims**

A dispersion, suitable for finishing substrates such as wood, metal, leather, paper, fabrics, plastics and the like, having a continuous liquid phase and a dispersed polymer phase which undergoes only partial coalescence on drying under ambient conditions thereby being easy to work (sand). On being subjected to coalescing means substantially complete coalescence can thereafter be obtained.

3,765,925

PROCESS OF PRODUCING A PERMEABLE SYNTHETIC FILM

Walter T. Murphy, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich, Company, New York, N.Y.

Filed Nov. 1, 1971, Ser. No. 194,526

Int. Cl. B44d *1/44*

U.S. Cl. 117—63 **2 Claims**

A poromeric film is provided which is based on a polymer cement of polyurethane, polyvinyl chloride, and plasticizer. No internal non-solvent is used. The cement is applied to a water permeable substrate and coagulated in a water bath.

3,765,926

METHOD FOR FORCING FLUENT MATERIAL INTO A SUBSTANTIALLY RESTRICTED ZONE

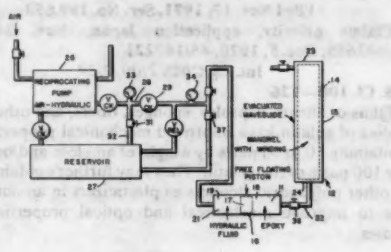
Karapurath Ramachandran, Hightstown, N.J., assignor to Western Electric Company, New York, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,766

Int. Cl. B44d *1/06*

U.S. Cl. 117—65.2 **3 Claims**

Fluent material is forced into a substantially restricted zone of utilization, having one irregular surface, for example, in impregnating an epoxy material between a number of helically wound strands on a mandrel closely surrounded by a tubular member, as in the forming of a waveguide. A first, holding pressure above atmospheric is applied to the fluent material to prevent back flow while a succession of pressure pulses at a second, increased pressure is introduced into the fluent material to drive the material into the substantially restricted zone at an increased rate of flow and effect uniform impregnation. A reciprocating pump may be utilized to provide the pulses of pressure at the second, increased pressure, while a check valve may be set to provide the first, holding pressure in the fluent material.



3,765,927

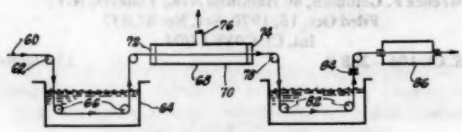
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas, Toledo, Ohio

Filed Jan. 11, 1971, Ser. No. 105,202. The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl. B32b *17/10, 25/10, 25/14*

U.S. Cl. 117—72 **11 Claims**



Glass fibers for use in glass fiber-reinforced elastomeric products are produced by impregnating a bundle of previously sized glass fibers with a composition containing a high surface tension elastomer latex, then passing the impregnated bundle into a region of reduced pressure which contains a blend of an elastomer compatible material and an elastomer, and finally applying a top coating of the elastomer compatible material.

3,765,928

ETHYLENE/ALPHA, BETA-UNSATURATED ACID INTERPOLYMERS AS ADHESIVE SYSTEMS FOR POLYURETHANES

Walter Henry Smarook, Sommerville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 809,428, March 21, 1969, abandoned. This application Mar. 31, 1971, Ser. No. 129,942

Int. Cl. B44d *1/09*

U.S. Cl. 117—72 **8 Claims**

Laminates are prepared by bonding a layer or coating of ethylene/alpha,beta-olefinically unsaturated acid interpolymer to a substrate, and thereafter reacting a foamable mixture comprising polyisocyanate and polyol to produce cellular polyurethane such that at least a portion of said polyurethane becomes bonded to said substrate through said interpolymer during the foaming reaction.

3,765,929

IN SITU FLUORINATION OF GRAPHITE IN IRON ALLOY

Jerry Thomas Martin, Plainview, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1972, Ser. No. 240,268
Int. Cl. B44d *5/12*
U.S. Cl. 117—106 R 10 Claims

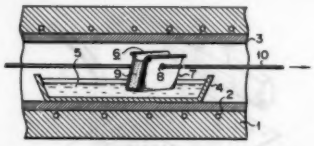
A self lubricating bearing surface is formed on high carbon iron alloy parts by fluorinating the exposed carbon particles at the surface of the part to form carbon monofluoride. The part is fluorinated in a reaction chamber by exposure to fluorine gas not exceeding a partial pressure of 76 torr in an inert gas and a temperature not exceeding 700° centigrade to substantially completely convert all exposed carbon particles to carbon monofluoride.

3,765,930

METHOD FOR COATING THE SURFACE OF A THIN WIRE WITH A LAYER OF ANOTHER METAL

Tadashi Miyano, Kanagawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 6, 1971, Ser. No. 160,096
Claims priority, application Japan, July 10, 1970, 45/59850
Int. Cl. C23c *1/08, 1/10*
U.S. Cl. 117—114 R 8 Claims



A method for manufacturing a dumet wire or a similar thin metal wire coated with a different metal wherein a small capillary device, which provides above the level of a molten metal bath a small capillary space to be filled with the molten metal by virtue of capillary attraction, is dipped into the molten metal bath, and a metal wire to be coated is passed through a molten metal pool created in the capillary space.

3,765,931

GLASS-LIKE COATINGS WITH OXIDATION-PROMOTING PROPERTIES

Hans Kyri; Albert Reiss, both of Koeln, and Josef Suss, Leverkusen-Rheindorf, all of Germany, assignors to Bayer Rickmann GmbH, Koeln, Germany

Filed July 7, 1972, Ser. No. 269,700
Claims priority, application Germany, July 17, 1971, P 21 35 835.0
Int. Cl. A21b *1/00*
U.S. Cl. 117—129 7 Claims

Metallic substrates such as steel plate are provided with a glass-like silicate coating which promotes oxidation by applying thereto a slip comprising a frit, about 5 to 30 percent of alumina and up to about 8 percent of a clay based on the weight of the frit. The frit contains about 0.3 to 6 percent by weight, calculated as the oxide, of a heavy metal such as cobalt, nickel, manganese, copper and/or iron, and combined sulfur present in about 0.3 to 7.5 percent by weight calculated as barium sulfide. The coated plate is then fired. A preferred frit composition comprises, by weight:

SiO_2 — 40 to 60 percent,
B_2O_3 — 0 to 10 percent,
Al_2O_3 — 0.5 to 7.5 percent,
alkali metal oxides — 10 to 25 percent,
alkaline earth metal oxides — 5 to 27 percent,
heavy metal oxides — 0.3 to 6 percent,
and fluorine
fluorine — 0 to 5 percent, and
sulfur calculated as BaS — 0.3 to 3 percent.

3,765,932

METHOD FOR ANTI-CORROSIVE COATING

Takamasa Kokubo; Isao Shimokuma, both of Kobe; Haruji Takahashi, Akashi; Katsuhiko Hirano, Kobe, and Masahiro Segawa, Iwaki, all of Japan, assignors to Shinko-Pfaudler Company Limited, Hyogo-ken and Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan, a part interest to each

Division of Ser. No. 96,245, Dec. 8, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,968
Claims priority, application Japan, Dec. 10, 1969, 44/99239
Int. Cl. B32b *15/08*; B44d *1/36*
U.S. Cl. 117—132 CF 4 Claims

Anti-corrosion coating method, wherein a composition prepared by mixing a vinylidene fluoride resin and a tetrafluoroethylene resin at an appropriate mixing proportion and a mixture of low and high boiling point solvents is used as the coating material.

3,765,933

METHOD FOR THE PROTECTION AGAINST AQUATIC PARASITES

Jean Lehureau, 54, grande rue de St. Rambert, Lyon, and Louis Bourdon, 40, chemin des Balmes, St. Foy les Lyon, both of France

Continuation of Ser. No. 16,972, March 5, 1970, abandoned. This application June 28, 1972, Ser. No. 267,124
Int. Cl. C09d *5/14*
U.S. Cl. 117—132 R 2 Claims

Method for protecting submarine works against aquatic parasites comprising applying to same a composition containing cuprous alkyl or alkylene thiocarbamates.

3,765,934

PROCESS FOR IMPREGNATING POROUS, CELLULOSIC MATERIAL BY IN SITU POLYMERIZATION OF STYRENE-MALEIC ANHYDRIDE COMPLEX

Norman G. Gaylord, New Providence, N.J., assignor to Champion International Corporation, New York, N.Y.

Filed Apr. 28, 1970, Ser. No. 32,736
Int. Cl. B44d *1/26*; B27k *3/36, 3/38, 3/50*
U.S. Cl. 117—148 12 Claims

There is disclosed the preparation of polymer composites with porous cellulosic materials, such as wood. The process for forming such a composite involves impregnating the wood with a polymerizable complex of a monomer combination such as a complex of maleic anhydride and styrene. The polymerization is uncatalyzed — i.e., it is conducted without employing conventional means for inducing polymerization of monomers in wood, such as high-energy radiation or the thermal decomposition of a chemical free radical precursor. There is also disclosed a solid, stable complex of styrene and maleic anhydride.

3,765,935

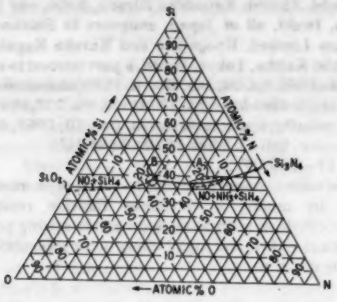
RADIATION RESISTANT COATINGS FOR SEMICONDUCTOR DEVICES

Myron Joel Rand, Bethlehem, and Paul Felix Schmidt, Allentown, both of Pa., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 834,123, June 17, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,548
Int. Cl. B44d *1/18*; C23b *5/62*
U.S. Cl. 117—201 6 Claims

Radiation insensitive dielectric films are provided on semiconductor devices, both of the bipolar and the insulated gate, field effect type, by depositing silicon oxynitride coatings of particular compositions. The tolerance for ionizing radiation is thereby increased by a factor of about 100 compared to silicon dioxide coatings.

The silicon oxynitride dielectric coating prevents both the formation of a space charge in the dielectric, and the formation of interface states at the silicon interface. The initial surface charge of the devices prior to irradiation can be optimized by a chemical treatment of the silicon surface preceding the deposition of the silicon oxynitride film.



3,765,936

ELECTROLESS COPPER PLATE

Charles R. Shipley, Jr.; Lucia H. Shipley; Michael Gulla, all of Newton, and Oleh B. Dutkewych, Medfield, all of Mass., assignors to Shipley Company, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 752,250, Aug. 13, 1968, Pat. No. 3,615,735. This application Aug. 23, 1971, Ser. No. 174,198

Int. Cl. C23c *5/02*

U.S. Cl. 117—212 **7 Claims**

An electroless copper deposit from a plating solution comprising a source of cupric ions, hydroxyl radicals, formaldehyde or a formaldehyde precursor, preferably paraformaldehyde, and a complexing agent for copper which solution is characterized by the addition of at least two members selected from the group consisting of a formaldehyde addition agent, a solution soluble salt of a Group VIII metal of the Periodic Chart of the Elements, and an organic silicon compound. The copper plate deposited from the preferred solution is alloyed with the Group VIII metal cation and is distinguishable from prior art electroless copper deposits by substantially improved bending or tensile properties and a smoother, more highly reflecting surface appearance.

3,765,937

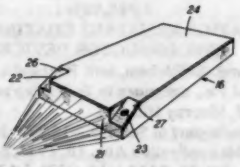
METHOD OF MAKING THIN FILM DEVICES

Joseph R. Hudnall, Lancaster, Ohio, assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 6, 1970, Ser. No. 87,462

Int. Cl. H01c *1/02*

U.S. Cl. 117—212 **9 Claims**



A thin film device includes a substantially flat ceramic substrate having bevelled surfaces formed in opposite corners of a major flat surface at one end thereof. Tantalum nitride is sputtered simultaneously onto the major flat surface and the bevelled surfaces to form a resistive film thereon. Thereafter a contact material is directed, in an evaporation process, onto an end edge surface of the ceramic substrate which is adjacent to the bevelled surfaces. The contact material is thereby deposited simultaneously onto the end edge surface and the bevelled surfaces having portions of the tantalum nitride film thereon. The contact material which was deposited onto the end edge surface of the substrate is removed so that the contact material remains only on the bevelled surface in overlapping engagement with underlying portions of the tantalum nitride film. This provides thin film device having contact areas in electrical connection with the tantalum nitride film to provide connection of the film with external circuits.

3,765,938

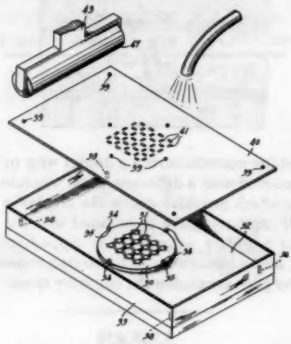
EXPLOSIVE BONDING OF WORKPIECES

Benjamin Howell Cranston, Trenton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 68,431, Aug. 31, 1970, Pat. No. 3,727,296, Continuation-in-part of Ser. No. 6,829, Jan. 29, 1970, abandoned. This application Nov. 26, 1971, Ser. No. 202,563

Int. Cl. B23p *3/09*

U.S. Cl. 117—212 **6 Claims**



First workpieces, for example, beam-leaded integrated circuits, and the like, are bonded to second workpieces, for example, metallized ceramic substrates by first depositing a quantity of primary explosive, such as lead azide, onto each beam lead and then detonating the explosive to explosively bond the integrated circuits to the substrate. In another embodiment of the invention, the explosive bonding force is applied through a buffer sheet of plastic or metallic material which protects the surface of the substrate from contamination and which, in addition, dampens the shock of the explosion. In yet another embodiment of the invention, metal conductive paths are explosively bonded directly to a ceramic or glass substrate to form a "printed circuit pattern." The same techniques are used to manufacture resistors, capacitors, inductors, etc.

3,765,939

METHOD OF COATING CATHODE HEATERS

Robert B. Reid, Stratham, N.H., assignor to GTE Sylvania Incorporated, Danvers, Mass.

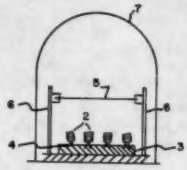
Filed May 10, 1972, Ser. No. 252,319

Int. Cl. B44d *1/18*

U.S. Cl. 117—217 **3 Claims**

A heater for use in an indirectly heated cathode of a

vacuum tube is first coated with an insulating layer of alumina. Metallic tungsten is then vacuum deposited on the alumina in



order to darken the color of the coating, thereby increasing its thermal emissivity.

3,765,940

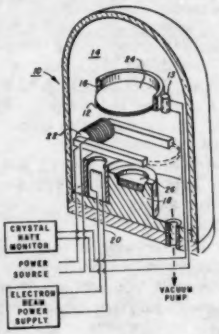
VACUUM EVAPORATED THIN FILM RESISTORS

Hanspeter P. K. Hentzschel, Reutlingen, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 8, 1971, Ser. No. 196,681

Int. Cl. B44d 1/02; H01l 7/36

U.S. Cl. 117—227 **10 Claims**



A thin film resistor is fabricated by coevaporating or codepositing semiconductor material selected from Group IV of the Periodic Table such as, for example, silicon and germanium and a doping material of electrical conductivity modifier such as aluminum, boron, antimony, or arsenic, for example, to form a thin film on an insulating substrate. The substrate may be formed from a material such as ceramic, glass, plastics, and either silicon or germanium if the silicon and germanium is provided with an insulating oxide layer. The amount of dopant in the thin film layer exceeds the solid-solubility limits of the dopant in the semiconductor material. The thin film is then crystallized by annealing to bring the thin film to an increased and stable conductivity state and the sheet resistivity measured. Thereafter the thin film is further annealed to oxidize the metal to produce a desired sheet resistance.

3,765,941

METHOD OF PREVENTING INOPERATION OF A COMPONENT BY LOOSE PARTICLES OF MATERIAL

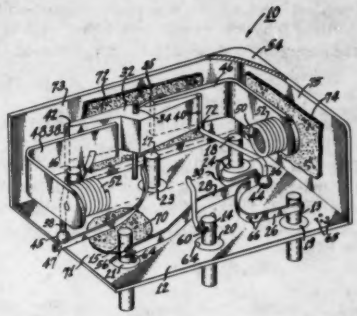
George Simon Gordon, Philadelphia, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jan. 4, 1971, Ser. No. 103,373

Int. Cl. B08b 7/00

U.S. Cl. 134—42 **4 Claims**

Electrical components are provided with a pressure-sensitive adhesive fixed within an enclosure for the component. Any loose particles of material dislodged from the component and/or dust are trapped by the adhesive. The method of preventing inoperation of the component, resulting from contaminating particles, comprises disposing the pressure-sensi-



tive adhesive within an enclosure for the component and vibrating the component to dislodge any particles loosely adhered thereto so as to trap the loose particles on the adhesive.

3,765,942

ACCUMULATOR OR BATTERY WITH SULFURIC ACID ELECTROLYTE CONTAINING PHOSPHORIC ACID

Otto Jache, Im Thiergarten, Budingen/Oberhessen, Germany

Continuation-in-part of Ser. No. 747,974, July 26, 1968, abandoned. This application Nov. 30, 1970, Ser. No. 93,888

Claims priority, application Germany, Dec. 1, 1967, A 57 56 121

Int. Cl. H01m 39/04

U.S. Cl. 136—26 **3 Claims**

A lead battery or accumulator in which each electrode is wrapped in a web of say, fiber glass, the electrolyte consists of a mixture of sulphuric acid and phosphoric acid, and the electrolyte is made thixotropic by addition of a jell-forming material, such as silicon dioxide with a particle size of 0.01 to 0.02 microns. The web provides pockets which hold the electrolyte, and between adjacent electrodes there are disposed perforated, undulant spacers. The electrode grids are preferably made of a lead-calcium base. Preferably the electrodes are charged while dry, then wrapped in the fiber web, then assembled into the battery housing; then the electrolyte is introduced into the housing; and the housing is ventilated.

3,765,943

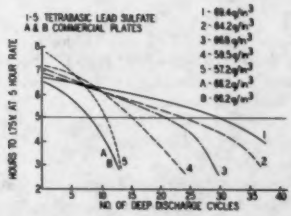
FABRICATION OF LEAD-ACID BATTERIES

Richard Victor Biagetti, North Plainfield, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 34,706, May 5, 1970, abandoned. This application Dec. 9, 1970, Ser. No. 96,519

Int. Cl. H01m 35/00

U.S. Cl. 136—27 **8 Claims**



Lead-acid batteries utilizing positive electrodes prepared from specific starting ingredients under critically specified

conditions show improved properties in use. Such positive electrodes are prepared by oxidation of tetrabasic lead sulfate ($4PbO{\cdot}PbSO_4$), which in turn is prepared in accordance with certain critically specified steps. Improved properties include increased product yield, greater life, greater reproducibility in the chemical and physical properties of the product and a crystal morphology more suitable to battery operation.

3,765,944
BATTERY HAVING A MOLTEN ALKALI METAL POLYSULFIDE CATHOLYTE AND CARBON COATED METALLIC ELECTRODE FOR USE THEREIN

William H. Taplin, III, Lafayette; Robert O. Lindblom, Walnut Creek, and Terry L. Caskey, Concord, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

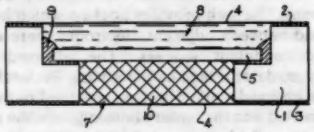
Filed Nov. 26, 1971, Ser. No. 202,649
Int. Cl. H01m *35/02*
U.S. Cl. 136—83 R **8 Claims**

Disclosed is an electrode having a metallic substrate covered by an adhering carbon coating. The metallic substrate consists essentially of magnesium or certain alloys containing magnesium, with the carbon coating being from 50 to 10,000 A thick. The electrodes are compatible with molten alkali metal sulfides since they do not passivate, i.e., lose their conductivity, when placed in contact with the sulfide melts for extended periods of time.

3,765,945
ELECTRIC CELLS AND BATTERIES

James L. Sudworth, Derby, England, assignor to British Railways Board, London, England

Filed Nov. 29, 1971, Ser. No. 202,984
Claims priority, application Great Britain, Dec. 1, 1970, 57,039/70
Int. Cl. H01m *31/00*
U.S. Cl. 136—83 R **2 Claims**



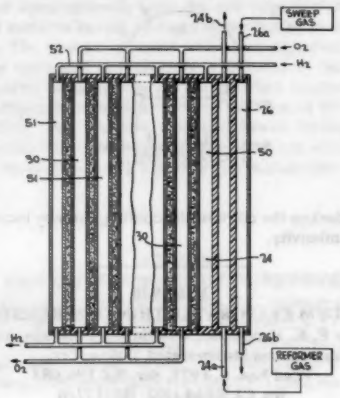
An electric cell of the kind in which the electrochemical reactants are liquid sodium as negative active material (anode) and liquid sulphur material as positive active material (cathode) and anode and cathode compartments are separated by a solid electrolyte which is a sodium ion conductor. The cell is assembled in the discharged state and the cathode compartment initially contains sodium poly-sulphide encapsulated in elemental sulphur.

3,765,946
FUEL CELL SYSTEM

Lawrence H. Werner, Vernon, and John C. Trocciola, Glastonbury, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,656
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 C **8 Claims**

A fuel cell system comprising an anode, a cathode and an electrolyte in combination with a reformer system comprising a reformer and reformer gas separator is described. The reformer gas separator comprises a first membrane selectively permeable to a consumable reactant gas (hydrogen) and a second membrane spaced from said first membrane selectively permeable to impurities or detrimental gases (CO_2). A sweep gas is maintained at the downstream side of the second membrane reducing the partial pressure of the detrimental gas and effectively increasing the partial pressure of the reactant gas providing a more efficient system.



3,765,947
METHOD OF MAKING FUEL CELL ELECTRODE

Edward J. Felten, Cheshire, and Kipp G. Pearson, South Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

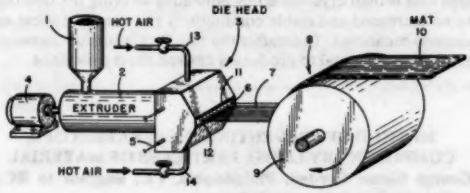
Continuation-in-part of Ser. No. 90,812, Nov. 18, 1970, abandoned. This application Mar. 13, 1972, Ser. No. 234,350
Int. Cl. H01m *13/00*
U.S. Cl. 136—120 FC **3 Claims**

A fuel cell electrode embodying an anodic catalyst including platinum and rhodium oxides and an oxide selected from the oxides of nickel, cobalt, iron and copper together with a component convertible to tungsten oxide is manufactured to provide high electrical performance at very low noble metal loadings.

3,765,948
REWETTABLE BATTERY SEPARATOR

Burnett H. Johnson, and Terrence Huff, both of Baytown, Tex., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed June 3, 1971, Ser. No. 149,677
Int. Cl. H01m *3/02*; D06m *3/00*
U.S. Cl. 136—146 **10 Claims**



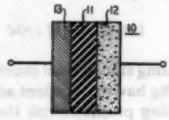
A nonwoven mat of polyolefin fiber is contacted with a gaseous sulfur dioxide-chlorine mixture to sulfo-chlorinate the surface of the polyolefin fibers and then treated with an amine, either after compacting the mat or before compacting the mat to form a structure suitable as a battery separator.

3,765,949

SOLID ELECTROLYTE BATTERIES AND METHODS FOR THEIR PRODUCTION

Alexander Duane Butherus, Murray Hill, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 2, 1971, Ser. No. 168,066
Int. Cl. H01m 11/00
U.S. Cl. 136—153 14 Claims



Solid electrolyte of the family exemplified by $RbAg_4J_5$ are used to form cells with silver-containing anodes and iodine-containing cathodes. The electrolytes are deposited from solution in which the solvent is an oxygen containing substituted hydrocarbon such as one of the ketones, alcohols or ethers. The electrolytes are produced in essentially pure form by a novel method involving the addition of certain other iodide compounds to the solution.

3,765,950

METHOD OF PRODUCING A GEL CONTAINING CONCENTRATED SULFURIC ACID

Helmut Lauck, Schlobborn, Germany, assignor to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Continuation-in-part of Ser. No. 16,931, March 5, 1970, abandoned. This application June 9, 1972, Ser. No. 261,162
Claims priority, application Germany, Mar. 10, 1969, P 19 11 976.7
Int. Cl. H01m 9/04
U.S. Cl. 136—158 14 Claims

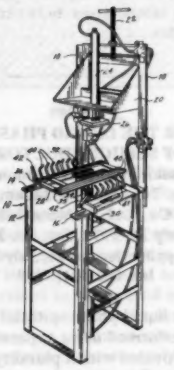
Method of producing a gel containing concentrated sulfuric acid for use in lead accumulators having dry storagable charged electrode plates comprising polymerizing acrylic acid, methacrylic acid or amides thereof in solution with cross-linking agents, grinding the resultant gel, drying the ground gel and thereafter soaking the resin particles thereby obtained in concentrated sulfuric acid.

3,765,951

METHOD OF SEALING A COVER TO A BATTERY

Laurence W. Hahn, 8513 Temple Park Drive, Tampa, Fla.

Division of Ser. No. 784,316, Dec. 17, 1968, Pat. No. 3,629,010. This application May 24, 1971, Ser. No. 146,514
Int. Cl. H01m 1/02
U.S. Cl. 136—176 3 Claims



An apparatus and method for sealing a battery cover to an assembled battery comprising the steps of inverting the battery on a platform, separately gripping the cover and container of the battery with vacuum pads, exposing the inside of the cover by simultaneously lowering the platform and vacuum pads attached to the cover, coating the cover with a sealant material by dispensing the sealant through nozzles which pivot into communication with the cover, reuniting the cover to the container, and curing the sealant.

3,765,952

OXIDIZING COMPOSITION AND PROCESS FOR ALUMINUM

Bertha S. Tuttle, Harwichport, and Jekabs Ozolins, Holliston, both of Mass., assignors to J. N. Tuttle, Inc., Medford, Mass.

Filed Aug. 10, 1971, Ser. No. 170,668
Int. Cl. C23f 7/06
U.S. Cl. 148—6.1 24 Claims

The invention is for a process for providing an oxide coating on aluminum which process uses chemical means only while avoiding the use of an electric current as is required in an anodizing process. Absent conventional steps such as water rinses and the like, the process comprises cleaning, including desmutting of an aluminum part to the extent necessary, and treating with an aqueous alkaline solution of a ferricyanide compound for a time sufficient to oxidize the aluminum part. The treatment with the ferricyanide solution is considered to be a chemical oxidizing step similar to the formation of an oxide film electrically in an anodizing process, but lower in cost and having other advantages. The oxidized aluminum surface is corrosion and heat resistant, acts as a base for various coating and is readily dyed to produce brilliant colors.

3,765,953

NIOBIUM-BASED OXIDATION RESISTANT MATERIALS AND PROCESS FOR THEIR PREPARATION

Jack Rene Paul Chevillon, Ris-Orangis; Georges Maurice Celestin Alois Gauje, Saulx-les-Chartreux, and Jacques Leopold Emile Grammagnac, Paris, all of France, assignors to Societe Nationale d'Etude & de Construction de Moteurs d'Aviation (S.N.E.C.M.A.), Paris, France

Filed Aug. 9, 1971, Ser. No. 169,932
Claims priority, application France, Aug. 12, 1970, 7029740
Int. Cl. C23f 7/02
U.S. Cl. 148—6.3 6 Claims

Niobium and niobium-based alloys are protected against oxidation by providing them with a protective coating of mixed metallic oxides of the β—Nb_2O_5 type.

3,765,954

SURFACE-HARDENED TITANIUM AND TITANIUM ALLOYS AND METHOD OF PROCESSING SAME

Shoichi Tokuda, and Hiromichi Kawahara, both of Kobe, Japan, assignors to Kobe Steel, Ltd., Kobe City, Japan

Filed Mar. 22, 1971, Ser. No. 126,634
Int. Cl. C23c 11/14; C22c 15/00
U.S. Cl. 148—20.3 6 Claims

Surface-hardened pure titanium or titanium-base alloys having a coating of a substitution type metal, which metal is characterized by a larger diffusion constant than titanium, is more readily nitrided than titanium, has a higher density than the base metal, is rich in stable beta phase, and which has a Vickers hardness of above 400. This hardened titanium or titanium-base alloy is produced by a method of hardening the surface of pure titanium or a titanium-base alloy which in-

cludes the steps of coating a substitution type metal of the above-mentioned type and heating the coated metal in a nitrogen-containing atmosphere.

3,765,955

SURFACE TREATED STEEL SHEET FOR USE IN A FORMING OPERATION

Hosei Kushima, and Kanji Yahano, both of Himeji, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed July 26, 1971, Ser. No. 164,797
Claims priority, application Japan, July 30, 1970, 45/66762
Int. Cl. C23f 7/04
U.S. Cl. 148—31.5 2 Claims

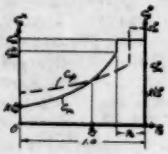
Surface treated steel sheet for use in a forming operation having a layer of a higher alcohol material which is solid at room temperature and of which the major constituent is one or more substances selected from the group consisting of higher alcohols, and, beneath the former layer, a layer of a chemically treated coating film or a layer of coating film of one or more metals selected from the group consisting of Zn, Pb, Cd, Cu, Cr, Sn and Al.

3,765,956

SOLID-STATE DEVICE

Chou H. Li, 379 Elm Dr., Roslyn, N.Y.

Continuation-in-part of Ser. Nos. 868,129, Oct. 21, 1969, abandoned, and Ser. No. 802,018, Feb. 25, 1969, Pat. No. 3,500,135. This application Oct. 19, 1971, Ser. No. 190,483
Int. Cl. H01l 3/16
U.S. Cl. 148—33 27 Claims



The ultra-miniaturized, active solid-state devices and circuitries have unique material bodies having signal-translating regions attached thereto for active signal translation. These regions, comprising melt-grown, or simulated melt-grown, metallurgical compounds including oxides, eutectics, and intermetallics, are of controlled compositions, concentration profiles, and electronic or other optoelectromagnetic properties. In some devices, the microstructure of the compounds comprises a plurality of microscopically thin, regularly-shaped and uniformly-spaced bodies of one phase material dispersed in a matrix of another phase material. The electronic conductivities of the bodies are substantially different from that of the matrix, and the bodies all terminate at microscopic distance from the pn junction (or other interfacial rectifying barrier region), so as to confine the signal current carriers to flow mainly in only one of the phases. This achieves carriers microstreaming or microbranching effects. Described also herein are different devices including micron-size eutectic devices, dendritic devices, cellular devices, and granular devices; and their methods of manufacture. The barrier regions may be further modified by diffusion, ion implantation, selective oxidation, electrolytic etching, and surface-contouring. In addition, selected circuit elements may be embedded into these devices to achieve additional carriers movement control or to obtain special beneficial effects.

3,765,957

METHOD OF FORMING ELECTRIC INSULATING COATING ON THE SURFACE OF SILICON STEEL SHEET WITH SERPENTINE

Kazuo Hamachi, Nishinomiya; Hiroshi Shimanaka, Chiba; Tatsuo Kawkkami, Takarazuka; Toshio Irie, Chiba, and Akira Komoda, Tokyo, all of Japan, assignors to Kawasaki Steel Corporation, Kobe City, Japan

Filed Dec. 14, 1970, Ser. No. 97,514
Claims priority, application Japan, Dec. 18, 1969, 44/101511
Int. Cl. H01f 1/04
U.S. Cl. 148—113 5 Claims

A method of treating silicon steel sheet and forming an electric insulating coating having excellent adherent, heat resisting and electric insulating properties on the surface of a silicon steel sheet is disclosed comprising the steps of coating the surface of a silicon steel sheet containing 2 to 4 percent by weight of silicon with a separator formed from an aqueous slurry state consisting of 5 to 40 percent by weight of serpentine material and the remainder of magnesia to which may be added 4 to 40 percent by weight of manganous oxide powder, the coating will include the serpentine material in its dried state to an amount of 0.5 g/m² to 6.0 g/m², the magnesia in its dried state to an amount of 2 g/m² to 12 g/m² and the manganous oxide, if present, in its dried state in an amount of 0.5 g/m² to 6.0 g/m², the coating step is followed by drying the silicon steel sheet thus coated, and box annealing the coated and dried steel sheet in a reducing atmosphere containing hydrogen at a high temperature.

3,765,958

METHOD OF HEAT TREATING A FORMED POWDER PRODUCT MATERIAL

John C. Freche, Fairview Park; William J. Waters, Cleveland, and Richard L. Ashbrook, Berea, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics of Space Administration, Washington, D.C.

Division of Ser. No. 29,917, April 20, 1970, Pat. No. 3,702,791. This application June 28, 1972, Ser. No. 266,928
Int. Cl. B22f 3/24
U.S. Cl. 148—126 6 Claims

Heat treating a product material of prealloyed powders after shaping by superplastic deformation restores the ability of the material to resist deformation at high temperatures. Heat treating is accomplished by heating to a temperature between the solidus and liquidus with the application of isostatic pressure to close any voids. This pressure may be simultaneously applied while the material is at the heat treating temperature. The pressure may also be applied when the material cools to a temperature between that at which it is shaped and the solidus.

3,765,959

METHOD FOR THE LIQUID PHASE EPITAXIAL GROWTH OF SEMICONDUCTOR CRYSTALS

Yoichi Unno, Kawasaki; Motoyuki Yamamoto, Kamakura, and Haruki Kurihara, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 24, 1972, Ser. No. 274,601
Claims priority, application Japan, July 30, 1971, 46/67333
Int. Cl. H01l 7/38
U.S. Cl. 148—171 7 Claims

A method for the liquid phase epitaxial growth of semiconductor crystals is performed using apparatus that comprises a dis-shaped vessel provided with a plurality of receptacles of a source solution for said epitaxial growth; a similarly disc-shaped boat disposed close to the underside of the vessel and provided with a recess for receiving a substrate on which there

are to be formed semiconductor crystals by liquid phase epitaxial growth, said recess being cut out in that side of the boat which faces the vessel so as to be brought exactly under any of the receptacles of the vessel when it is rotated; a quartz pipe for supporting the boat; means for rotating either of the vessel and boat relative to the other; an envelope surrounding the vessel and boat in airtight relationship; means for conducting a desired type of gas through the envelope; and a cylindrical furnace enclosing the envelope to heat its interior with the relative position of said cylindrical furnace and envelope rendered adjustable.

3,765,960

METHOD FOR MINIMIZING AUTODOPING IN EPITAXIAL DEPOSITION

David W. Boss, Beacon; Bernard M. Kemlage, Hopewell Junction; Vincent J. Lyons, Poughkeepsie, and Hans B. Pogge, La Grangeville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 2, 1970, Ser. No. 86,208
Int. Cl. H01l 7/36; C23c 13/02
U.S. Cl. 148—175 2 Claims

Autodoping is minimized during the growth of an epitaxial layer on a semiconductor substrate by contacting the substrate with a gaseous reaction mixture at a low pressure, substantially below atmospheric to deposit at least the initial capping layer.

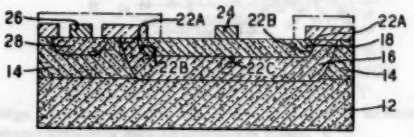
The reaction mixture contains a relatively minor portion of a semiconductor compound along with a carrier gas. Subsequently, a second gaseous reaction mixture containing a greater portion of a compound of a semiconductor material may be used to complete the deposition of the epitaxial layer. This is done merely to reduce the total growth cycle.

3,765,961

SPECIAL MASKING METHOD OF FABRICATING A PLANAR AVALANCHE TRANSISTOR

Jerry Mar, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 12, 1971, Ser. No. 114,861
Int. Cl. H01l 7/44, 3/00, 15/00
U.S. Cl. 148—175 4 Claims



An avalanche junction transistor is fabricated by growing on an n+—type substrate an n-type epitaxial layer, masking all but a central region of the epitaxial layer, converting the central region of the epitaxial layer to p-type material, substantially increasing the diameter of the aperture in the mask and converting a portion of the p-type material to n+—type material. Connections are provided to the central n+—type region and the *n*-type epitaxial layer. Accordingly, the surface portion of the resulting p-n+ junction is located in a region of relatively low impurity concentration; consequently, avalanche breakdown is restricted to a region below the surface of the junction, thereby avoiding surface breakdown that would otherwise degrade transistor performance.

3,765,962

METHOD OF MAKING A CHARGE STORAGE DEVICE

Michael Poleshuk, Mahopac, N.Y., and Alfred E. Milch, Teaneck, N.J., assignors to North American Philips Corporation, New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,551
Int. Cl. H01l 7/46
U.S. Cl. 148—177 8 Claims

An improved method for fabricating a vidicon camera tube having a germanium target comprising an array of p-n junctions is described. Each of the p-n junctions is surrounded by an insulating layer whereas the surface of each of the p-n junctions facing an electron beam source is free of insulating materials. The new method of making the germanium vidicon camera tube target results in improved electrical performance for the vidicon camera tube while being economical.

3,765,963

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Taro Okabe, Tokyo, and Eiki Tanikawa, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 24, 1971, Ser. No. 127,628
Claims priority, application Japan, Apr. 3, 1970, 45/28357
Int. Cl. H01l 7/36
U.S. Cl. 148—188 9 Claims

A method of manufacturing semiconductor devices comprises the steps of covering the surface of a semiconductor substrate with an insulating film, leaving a designated surface portion uncovered and exposed. A silica glass film containing an impurity is formed on top of the insulating film and on the said surface portion. Thereafter, the substrate is heated to diffuse the impurity from the glass film into the semiconductor substrate, forming a transmuted layer whose saturated concentration is lower than the concentration of the impurity contained in the glass film and which transmuted layer has an etching rate lower than that of the glass film. After the etching step the glass film is removed from the transmuted layer and from said surface portion by chemical etching.

3,765,964

WATER-IN-OIL EMULSION TYPE EXPLOSIVE COMPOSITIONS HAVING STRONTIUM-ION DETONATION CATALYSTS

Charles Gary Wade, Lehighton, Pa., assignor to ICI America Inc., Wilmington, Del.

Filed Oct. 6, 1972, Ser. No. 295,565
Int. Cl. C06b 1/04
U.S. Cl. 149—2 18 Claims

A water-in-oil emulsion explosive composition comprising a carbonaceous fuel, an inorganic oxidizer, a detonation sensitizer, water, an emulsifier, and an occluded gas is further sensitized by the incorporation of strontium compounds which are soluble in the aqueous phase. The sensitized materials can be detonated with a No. 6 cap at diameters as low as 1 inch and with densities as high as 1.25 grams/cc.

3,765,965

COMPOSITE PROPELLANT COMPOSITION WITH FERROCENE COMPOUND AS BONDING AGENT AND BALLISTIC MODIFIER

Dennis C. Van Landuyt, Auburn, and Orval E. Ayers, Huntsville, both of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 155,672, June 15, 1971. This application July 12, 1972, Ser. No. 270,798
Int. Cl. C06d 5/06
U.S. Cl. 149—7 5 Claims

The compound 1-pyrrolidinyl-methylferrocene in composite propellant compositions containing a binder, an oxidizer and a metallic fuel and as a coating agent for ammonium perchlorate.

3,765,966
GELLED NITROMETHANE COMPOSITION

Donald W. Edwards, Lehighton, Pa., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Filed July 21, 1972, Ser. No. 274,118
Int. Cl. C06b 7/00, 19/04
U.S. Cl. 149—18 **7 Claims**

A process for the production of a gelled explosive composition of nitromethane, inorganic nitrate, a water or methanol fluid medium, and gelling agents therefor, comprising mixing said nitromethane and said fluid medium, adding with thorougn agitation said inorganic nitrate, a gelling agent for the fluid medium and a cyanoethyl ether of galactomannan gum gelling agent for the nitromethane.

3,765,967
LIQUID AND SLURRY EXPLOSIVES OF CONTROLLED HIGH SENSITIVITY

Albert G. Funk; Boyd L. Hansen, and Melvin A. Cook, all of Salt Lake City, Utah, assignors to Iresco Chemicals, Salt Lake City, Utah

Continuation of Ser. No. 876,576, Nov. 13, 1969. This application Mar. 23, 1972, Ser. No. 237,585
Int. Cl. C06b 1/04
U.S. Cl. 149—21 **24 Claims**

Dense liquid or slurry explosive compositions, which can be pumped or poured and detonated in very slender columns have a liquid menstruum made sufficiently sensitive per se for cap detonation in diameters as small as one-half inch. They comprise a complete solution of an alkali or alkaline earth metal perchlorate, e.g. sodium perchlorate, combined preferably with a small amount of ammonium or sodium nitrate, organic liquid fuel, preferably ethylene glycol, and solid particulate aluminum as fuel, TNT, PETN or RDX also can be added. Basic sensitivity is provided by molecularly adjacent fuel with all oxidizer in solution.

3,765,968
PROCESS FOR ETCHING POLYMERIC FILMS

James W. Leggingwell; Curt Thies, and Dennis W. Werkmeister, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed May 15, 1972, Ser. No. 253,605
Int. Cl. B44c 1/22
U.S. Cl. 156—7 **7 Claims**

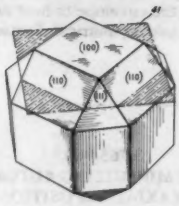
A process for etching a film of two polymeric materials is disclosed. The eligible polymeric films are mutually miscible before imaging or etching. Prior to etching, the films are imaged by phase separation. This imaging is accomplished by contacting the films with appropriate solvents. The imaged areas are etched by contact with a liquid such as water or alcohol. The etched films produced by the process of this invention can be employed as a display device or as a printing element.

3,765,969
PRECISION ETCHING OF SEMICONDUCTORS

Roger Clyde Kragness, Bethlehem, and Herbert Atkin Waggener, Allentown, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation of Ser. No. 603,292, Dec. 20, 1966, abandoned. This application July 13, 1970, Ser. No. 54,653
Int. Cl. H01l 7/00; G03c 5/00; C09k 3/00
U.S. Cl. 156—17 **4 Claims**

A method of precision etching for semiconductor device fabrication using the preferential characteristics of certain etchants for particular crystallographic planes of monocrystalline material. In particular, silicon is precisely etched by disposing etch masks on surfaces parallel to the (100) plane with the mask edges parallel to the lines of intersection of the (111) planes with the (100) plane, and using alkali hydroxide etches as well as certain organic reagents, which have substantially lower etch rates with respect to the (110) and (111)

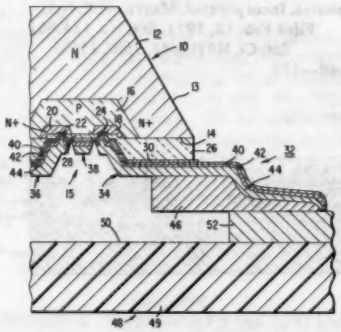


planes. Also, undercutting at intersections of the mask boundaries which expose the (110) plane is avoided by shaping the mask to compensate therefor. A suitable etchant formulation contains 50 parts by volume of water, 15 parts by volume of n-propanol and has molar concentration of hydroxide of about 5.3.

3,765,970
METHOD OF MAKING BEAM LEADS FOR SEMICONDUCTOR DEVICES

Terry George Athanas, Lebanon, and Angelo Antonio Anastasio, Trenton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 24, 1971, Ser. No. 156,398
Int. Cl. H01l 7/00, 7/50
U.S. Cl. 156—17 **15 Claims**



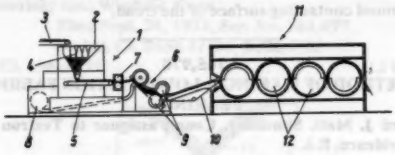
Cantilevered beam leads are formed on a semiconductor wafer by a process which includes the steps of evaporating titanium, palladium, and gold in a single pump-down of the evaporation apparatus. Prior to the application of these layers, the contact areas of the device are conditioned for ohmic contact by depositing an aluminum layer on the wafer and then heating the wafer in a non-oxidizing atmosphere to form an aluminum-silicon alloy in the contact regions. Any unalloyed aluminum is then removed and the evaporated beam lead system is deposited. Thereafter the metallization pattern is defined photolithographically.

3,765,971

PROCESS FOR THE DRY PRODUCTION OF A FIBER WEB

Heinz Fleissner, Wolfsgartenstr 6, Frankfurt am Main, Germany

Filed Oct. 20, 1970, Ser. No. 82,241
Claims priority, application Germany, Oct. 20, 1969, P 19 52 741.4
Int. Cl. B24t 5/00
U.S. Cl. 156—62.2 9 Claims



A method and apparatus for producing a fiber web by a dry method which comprises adding at least a portion of a bonding agent to the loose fibers and forming the loose fibers into a web, the bonding agent being uniformly distributed throughout the web.

3,765,972

PROCESS FOR ADHERING PREFORMED RESINOUS COVERINGS TO ARCHITECTURAL SURFACES

George L. Wesp, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 842,086, July 14, 1969, Pat. No. 3,578,548. This application Jan. 21, 1971, Ser. No. 108,637
Int. Cl. B32b 25/08, 27/38
U.S. Cl. 156—71 33 Claims

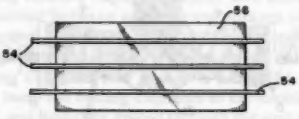
A process for applying preformed resinous coverings to architectural surfaces such as floors, walls and the like comprises adhering a covering to a surface with a pressure-sensitive adhesive which, upon contact after drying, develops an immediate bond of high cohesive strength between the surface and the covering that becomes a permanent moisture-resistant bond. The adhesive compositions comprise a latex and a transient tackifier which comprises an epoxy resin and a curing agent. Some adhesive compositions may be foamed to provide a conformable smooth supporting surface for a high modulus preformed resinous covering. The architectural surface, preformed resinous covering and pressure-sensitive adhesive containing a transient tackifier comprise a useful architectural surface composite for residential and commercial installations.

3,765,973

METHOD OF WELDING TOGETHER TWO THERMOPLASTIC WORKPIECES BY HIGH FREQUENCY VIBRATORY ENERGY

George C. Kramer, Danbury, Conn., assignor to Branson Instruments, Incorporated, Stanford, Conn.

Filed Mar. 3, 1972, Ser. No. 231,524
Int. Cl. B32b 31/16
U.S. Cl. 156—73 4 Claims



For welding together by vibratory energy (sonic or ultrasonic frequency) two workpiece portions which are in abutting contact, an energy concentrating element is disposed between the juxtaposed surfaces to be welded. The energy concentrating element promotes the build-up of dissipated energy to quickly provide molten material which flows and upon solidification produces a fused joint.

3,765,974

SPOT-BONDED MATS AND PROCESS FOR THEIR MANUFACTURE

Peter Petersik, Luetzelsachsen, and Rudolf Gaertner, Weinheim, both of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Continuation-in-part of Ser. No. 848,460, Aug. 8, 1969, abandoned. This application Jan. 28, 1971, Ser. No. 110,576
Claims priority, application Germany, Apr. 24, 1969, P 19 20 836.7; Feb. 4, 1970, P 20 04 988.1
Int. Cl. B32b 31/20, 31/22, 3/30
U.S. Cl. 156—84 8 Claims

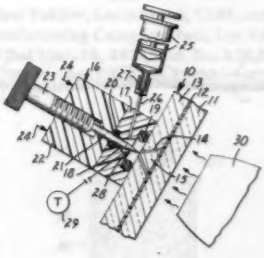
Improvements in producing a bonded non-woven fabric matting where the bonding agent is located in discontinuous areas of the matting or is present in differing and varying proportions in different areas of the matting. Such a product is made by substantially uniformly impregnating the matting with a heat sensitive coagulatable binder latex, non-uniformly heating the impregnated matting to the coagulation temperature of the latex only in predetermined areas of the matting whereby coagulating the binder from the latex only in the preselected areas which have been subjected to heating to a temperature sufficient to coagulate binder from the latex, and then removing that portion of the latex from which the binder was not coagulated by the non-uniform heating.

3,765,975

WINDSHIELD REPAIR

Gordon P. Hollingsworth, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 17, 1971, Ser. No. 209,092
Int. Cl. B32b 35/00
U.S. Cl. 156—94 3 Claims

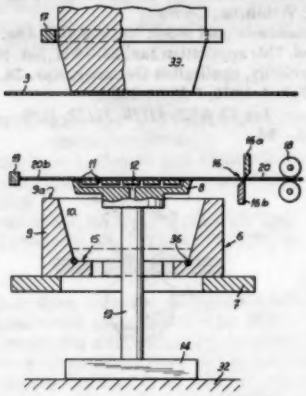


In-place permanent repair of pockmarked windshields involves vibrationless application of curable liquid resin under defined conditions of temperature and pressure.

3,765,976
APPARATUS AND METHOD FOR PRODUCING CONTAINER WITH COMPOSITE WALLS

Jean Roger Nasica, Paris, France, assignor to Intercan S.A., Fribourg, Switzerland

Filed July 6, 1970, Ser. No. 52,240
Claims priority, application Switzerland, July 9, 1969, 10525/69
Int. Cl. B32b *1/00, 31/20*
U.S. Cl. 156—105 3 Claims

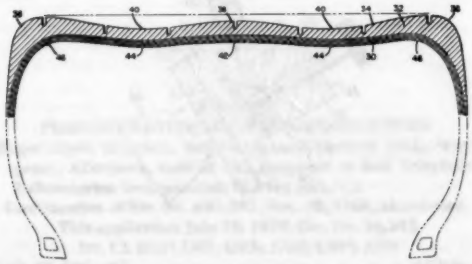


A container is formed from sheet material in a female mold which has an open top and a bottom that is multi-perforate. The bottom moves relative to the side walls of the mold and is advanced to the open top of the mold to contact the sheet material. Vacuum is then applied through the holes of the mold bottom to draw the sheet flat against the mold bottom, after which the mold bottom is retracted to the bottom of the mold to draw the sheet material down into the mold. Heated thermoplastic sheet material can then be laminated to the sheet material in the mold and the container completed. The sheet material thus drawn into the mold is accurately positioned, which is advantageous when the sheet material is printed so that correct registry is important.

3,765,977
METHOD OF MAKING A PNEUMATIC TIRE

Donald L. Knight, Kent, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 732,206, May 27, 1968, Pat. No. 3,599,695. This application Dec. 3, 1970, Ser. No. 94,713
Int. Cl. B29h *17/02*
U.S. Cl. 156—128 2 Claims

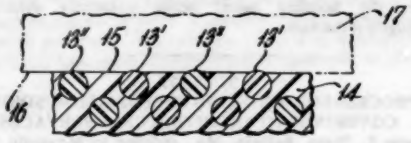


A pneumatic tire having a carcass and a tread disposed about the carcass wherein the ground contact surface of the tread, when the tire is viewed in cross-section, is generally sinuous in configuration to provide at the tread centerline a convex portion bounded at its opposite sides by a pair of reversely curved concave portions each of which is disposed between the tread centerline and the shoulder areas of the tire or lateral edges of the tread. The carcass underlying the tread has a cross-sectional contour in the crown area of the tire which generally approximates the sinuous configuration of the ground contacting surface of the tread. The tread may be thicker at the centerline than it is generally at the center of the two portions of the tread underlying the concave portions of the ground contacting surface of the tread.

3,765,978
METHOD OF MAKING A LOW-FRICTION FABRIC BEARING

Richard J. Matt, Simsbury, Conn., assignor to Textron Inc., Providence, R.I.

Filed July 8, 1971, Ser. No. 160,661
Int. Cl. B29b *1/00*
U.S. Cl. 156—148 18 Claims

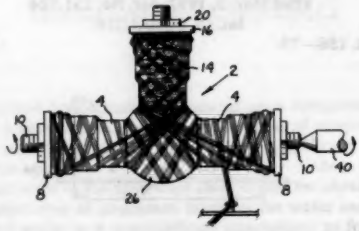


Improved wear and load-carrying properties result for a resin-impregnated fabric bearing wherein the bearing surface includes, as the most significant fabric component, a yarn which is a compounded bundle of sized TFE filaments and sized filaments of high-temperature nylon, in the proportion of at least no more than 50 percent TFE by volume. The yarn is loosely twisted, to the extent that after construction of a fabric with said yarn, the yarn is fully washable, to remove the sizing, down to the innermost filaments. This enables full impregnation of the fabric with synthetic resin, and curing in substantially intimate and continuous and void-free relation of the resin to all filaments within the yarn of the fabric.

3,765,979
SYSTEM FOR THE FORMATION OF PIPE FITTINGS BY THE WINDING OF RESIN IMPREGNATED FILAMENTS AROUND A MANDREL

Joseph John Thomas, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Continuation of Ser. Nos. 20,484, March 26, 1970, abandoned, and Ser. No. 714,172, March 19, 1968, abandoned. This application Dec. 6, 1971, Ser. No. 205,285
Int. Cl. B65h *81/00, 81/08;* F16l *41/02*
U.S. Cl. 156—173 11 Claims



A system for forming pipe fittings having at least a pair of tubular sections by the winding of resin impregnated filaments

around a mandrel wherein the mandrel's outside configuration at the intersection of said tubular sections is in the form of a bulge which, in the preferred embodiments, comprises an ellipsoid or a sphere.

3,765,980

METHOD FOR FORMING PIPE WITH INTEGRAL HOLE OR NOZZLE PATTERN

William B. Hurlbut, Sr., East Hartford, and Preston D. Liebig, West Hartford, both of Conn., assignors to Combination Engineering, Inc., Windsor, Conn.

Filed Sept. 24, 1971, Ser. No. 183,497
Int. Cl. B65h *81/08*; B32b *5/02*
U.S. Cl. 156—175 **2 Claims**

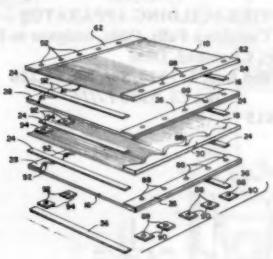
A method for forming pipe from reinforced fiberglass, the pipe having an integral hole or nozzle pattern. A mandrel with removable pins of a specific diameter and configuration placed in a desired array therealong is used as a pattern for resin impregnated reinforced fiberglass which is filament wound on the mandrel to build up the pipe structure.

3,765,981

METHOD OF MANUFACTURING A DISTILLATION APPARATUS

Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Cambridge, Mass.

Division of Ser. No. 112,854, Feb. 5, 1971, Pat. No. 3,661,721, which is a continuation-in-part of Ser. Nos. 838,769, July 3, 1969, abandoned, and Ser. No. 838,872, July 3, 1969, abandoned. This application Feb. 2, 1972, Ser. No. 222,838
Int. Cl. B01d *3/00*; B31f *1/20*
U.S. Cl. 156—210 **9 Claims**



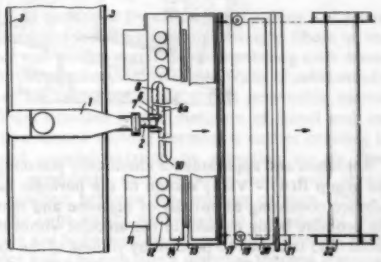
A still comprising a distillation unit formed by arranging microporous membranes and corrugated, impermeable films in alternating stacked relation together with adhesive sealing elements located between adjacent membranes and films and a spacer located between two stacks of membranes and films, to form channels for liquids. The assembly of membranes, films, sealing elements and spacer is subjected to heat and pressure to bond the sealing elements to the membranes, films and spacer, and holes are drilled through the unit to form conduits for feeding liquids to and from selected channels between adjacent membranes and films. The unit is then located together with sealing elements between the walls of two complimentary housing sections which are sealed to one another to form a housing enclosing the unit and subjected to heat and pressure to bond the unit to the walls of the housing to form additional liquid channels. The corners of the distillation unit are sealed to the corners of the housing to form chambers for receiving and distributing feed, heating, and coolant liquids. All of the components are designed to be fabricated or formed of polymeric sheet materials and connections for the flow of liquids are made to the conduits within the still (housing) by way of nipples secured to the housing and/or liquid conduits pressed into liquid-tight engagement with the housing. One surface of each membrane is corrugated to prevent blockage of the channels for feed liquid and the walls of the housing as well as the spacer are corrugated to provide channels for heating and coolant liquids.

3,765,982

PROCESS FOR MANUFACTURING LARGE SHEETS OF THERMOPLASTIC MATERIAL FROM EXTRUDED STRIPS JOINED TOGETHER ALONG THEIR EDGES

Werner Blose, Hamburg, Germany, assignor to Weill & Reineke G.m.b.H., Hamburg, Germany

Filed Aug. 6, 1971, Ser. No. 169,615
Claims priority, application Germany, Aug. 7, 1970, P 20 39 236.3
Int. Cl. B29c *27/00*
U.S. Cl. 156—244 **5 Claims**



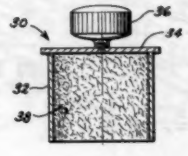
In the production of large sheets of thermo-plastic material strips of the extruded material are deposited on a supporting device by a back and forth movement and the extent of this movement is set by the desired width of the sheet. The supporting device is indexed in a step by step movement, corresponding to the back and forth movement of the material, so that the strips of material are deposited in parallel relationship to each other. The strips are then bonded together to form the continuous sheet.

3,765,983

METHOD FOR SOLVENT WELDING PLASTIC PIPE JOINTS

Charles William Putzier, Los Angeles, Calif., assignor to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.

Filed Mar. 10, 1971, Ser. No. 122,871
Int. Cl. B29b *27/00*
U.S. Cl. 156—293 **9 Claims**



Leak-free plastic pipe joints are made by methods which utilize specially-designed applicators for applying the primer

and solvent cement coatings. Full and thorough coatings are obtained on the mating surfaces of the pipe and fitting, and solvent evaporation prior to joining of these two members is deterred.

3,765,984

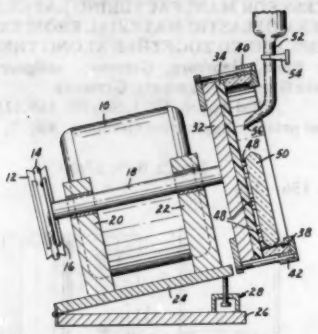
APPARATUS FOR CHEMICALLY POLISHING CRYSTALS

Wolfgang H. Strehlow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 745,618, July 17, 1968, Pat. No. 3,629,023. This application Dec. 14, 1970, Ser. No. 98,097

Int. Cl. B28d *5/00*

U.S. Cl. 156—345 **3 Claims**



A method and apparatus for chemically polishing crystals of the group II(b) – VI(a) system of the periodic table using a mixture consisting essentially of bromine and methanol with the bromine being present in the amount within the range of about 0.05 to about 10 percent by volume of the total solution of the mixture and forming a moving fluid film of the mixture to polish the crystal surface is shown. The apparatus includes a polishing dish and crystal support disk which supports the crystal to be polished and positions the crystal surface to be polished adjacent a plate which forms part of the polishing dish and a dispensing means which supplies a polishing solution between the plate and crystal surface for establishing a fluid film therebetween to chemically polish the crystal surface.

3,765,985

APPARATUS FOR WELDING TWO SHEETS BY ULTRA HIGH FREQUENCY ENERGY

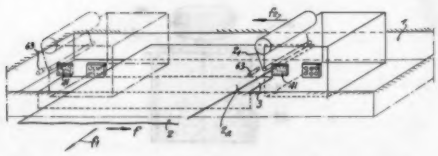
Michel Siard, Sainte Adresse, and Michel Laurentie, Le Havre, both of France, assignors to Compagnie Francais de Raffinage, Paris, France

Filed Nov. 8, 1971, Ser. No. 196,369

Claims priority, application France, Nov. 6, 1970, 7040001

Int. Cl. B29c *19/02;* **H05b** *5/00*

U.S. Cl. 156—380 **10 Claims**



Two sheets of material are heated to welding temperature by UHF energy by being first passed through a resonant cavity in which UHF energy is applied to the sheets in an overlapped region thereof whereafter the sheets are pressed together. The resonant cavity and the pressing rollers are carried on a traveling framework which is disposed in a pit, and one of the sheets is unwound as the framework travels to be overlapped onto the other sheet which is stationary and which extends over the pit at one of the edges thereof.

3,765,986

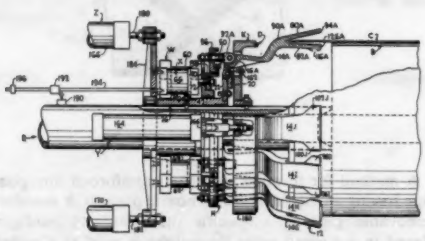
TIRE BUILDING APPARATUS

Wilhelm Brey, Cuyahoga Falls, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed Aug. 25, 1971, Ser. No. 174,905

Int. Cl. B29h *17/22, 17/24*

U.S. Cl. 156—400 **8 Claims**



Tire building apparatus comprising a drum unit comprising an expansible drum for the building thereon of a flat, cylindrical tire body or carcass, and carcass ply manipulating means including an assembly reciprocal axially of the drum and comprising overlapping members that first turn down the ends of the carcass ply or plies overhanging the ends of the drum to facilitate the setting of the bead rings and then turn up the ends of the carcass about the bead rings and then telescope over the upturned ends of the carcass plies and the ends of the drum to turn the ends back over the bead rings and the ends of the drum and press the turned over end of the carcass plies firmly against the bead rings and carcass proper.

3,765,987

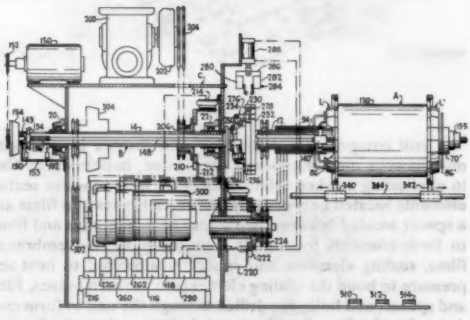
TIRE BUILDING APPARATUS

Wilhelm Brey, Cuyahoga Falls, Ohio, assignor to Intercole Automation, Inc., Cleveland, Ohio

Filed Aug. 5, 1970, Ser. No. 61,226

Int. Cl. B29h *17/16*

U.S. Cl. 156—415 **13 Claims**



Tire building method and apparatus especially adapted for single stage building of "belted" pneumatic tires, using a drum assembly providing a rigid cylindrical surface for the building

thereon of a flat, cylindrical tire body or carcass by the application to the drum of one or more radial or bias cord inner body or carcass plies and which drum is expansible for assembly and setting with the inner body or carcass of the inextensible tire beads or bead rings, and is further expansible and otherwise movable to impart to the body or carcass the desired size and shape for the reception of the circumferentially inextensible breaker strip or strips which form the "belt" and the tire tread material. The drum assembly includes three axially adjacent, mechanically expansible, sections the center section being expansible to a substantially greater extent than the end sections and the end sections being movable axially toward one another when the center section is expanded beyond the end sections to maintain the transverse perimetric dimension of the drum assembly constant or substantially so. The center drum section includes replaceable or interchangeable interleaved peripheral segments that are moved in a positive manner transversely of the drum axis to form a rigid expansible surface. A flexible cover, expansible peripherally, overlies the center drum section and is secured to the end drum sections. Pivotable members, circumferentially adjacent each other and carried by the end drum sections, underly the periphery of the flexible peripherally expansible cover on opposite sides of the center drum section and provide rigidity the full length of the drum assembly.

3,765,988

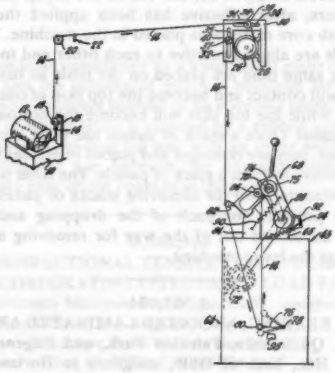
APPARATUS FOR PACKAGING LINEAR MATERIAL

Robert S. Schaffer, Huntingdon, Pa., and John W. Fitzgerald, Jr., Dorchester, Mass., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 731,209, May 22, 1968, abandoned. This application July 19, 1971, Ser. No. 164,024

Int. Cl. B65h *59/10, 77/00*

U.S. Cl. 156—441 **10 Claims**



The disclosure involves a method and apparatus for advancing linear material or a bundle or bundles of fibers by substantially constant feeding means to a packaging station or stations at which the linear material is wound into package form, the feeding of the linear material being dependent upon sufficient tension and character of engagement of the material with the feeding means to assure positive feed but upon failure of tension to provide slippage interrupting the advance of the material. The disclosure includes processing a multiplicity of strands impregnated with a coating material wherein the feed method is individual to each strand and the winding station therefor, the arrangement providing for automatic interruption of an individual winder and advancement of strand thereto in event there is breakage or loss of tension in the strand delivered to such winder without affecting delivery of strands to other operating winders.

3,765,989

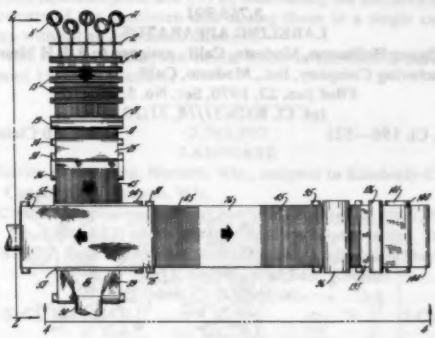
APPARATUS FOR CROSSLAYING WEB MATERIALS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 848,657, Aug. 8, 1969, Pat. No. 3,616,037. This application Aug. 6, 1971, Ser. No. 169,805

Int. Cl. D02g *3/00;* **D04h** *3/00*

U.S. Cl. 156—441 **6 Claims**



A method and apparatus for efficiently handling and crosslaying webs of substantially alignd light-weight fibers in the production of non-woven materials incorporating such crosslaid fibers for two-dimensional strength. Webs of substantially aligned fibers are conveyed along a first permeable carrier with their fibers oriented in the direction of travel and are transferred to a second moving permeable carrier crossing in closely spaced parallel relation by directing an air flow through said permeable carriers when each web length reaches the position between the crossing carriers. The air flow causes the light-weight web length to be removed from the first carrier and to be positioned and held against the other moving carrier with the web fibers oriented thereon transversely to the direction of travel. The illustrated apparatus includes two such carrier systems for changing the orientation of web lengths with respect to their direction of travel, and these systems alternately present web lengths to a continuous moving fiber web to form an uninterrupted ply of crosslaid fibers thereon. Two adhesively coated cover sheets are then applied to contain the crosslaid fibers and form a composite non-woven material.

3,765,990

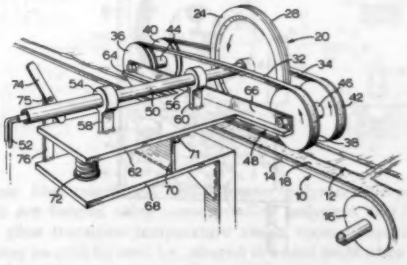
APPARATUS FOR SIDE SEALING TWO LAYERS OF HEAT SEALABLE FILM TO COMPLETE A PACKAGE

William N. Histed, Hamilton, Ontario, and Harry Shaw, Aurora, Ontario, both of Canada, assignors to Gerrard Company, Ltd., Hamilton, Ontario, Canada

Filed Aug. 12, 1971, Ser. No. 171,122

Int. Cl. B32b *31/18, 31/20;* **B65b** *51/16*

U.S. Cl. 156—515 **3 Claims**



Apparatus for side sealing packages made of plastic films consists of a rotary member having a heated sealing and

cutting blade to the side of which is another blade, heated by the first blade, the two blades forming a pair of seals; the blades bear against a moving belt which also supports the package and a pair of upper belts are provided one to each side of the rotary member, these belts working in conjunction on the upper side of the seal to remove any tension thereon during and immediately after sealing.

3,765,991

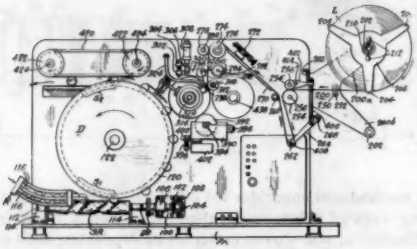
LABELING APPARATUS

Wolfgang Hoffmann, Modesto, Calif., assignor to B & H Manufacturing Company, Inc., Modesto, Calif.

Filed Jan. 23, 1970, Ser. No. 5,187

Int. Cl. B32b *31/18, 31/20*

U.S. Cl. 156—521 **10 Claims**



The invention provides a labeling apparatus and method of labeling containers, wherein the control of the labeling operation is dependent on the supply of the labels. Also, there may be used a continuous length of labels rather than individual pre-cut labels, resulting in a very high-speed operation. The labeling device includes a continuous supply of labels, cutting means for providing individual label lengths, adhesive applying means for printing the labels, and label applying means for applying labels to individual containers. Operating in conjunction with the labeling components are means for controlling and transporting an individual container between a container receiving and container discharge station, whereby the label is applied to the container before the discharge station, thereafter wrapped about the container.

3,765,992

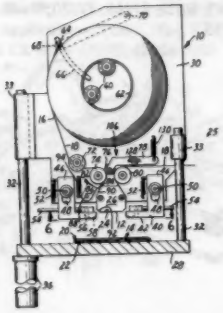
STRIP ADHESIVE APPLICATION MECHANISM

Wilfred E. Stageberg, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 30, 1971, Ser. No. 213,958

Int. Cl. B32b *31/00*

U.S. Cl. 156—521 **6 Claims**



A mechanism for transferring predetermined lengths of pressure-sensitive strip adhesive to objects from a supply of strip adhesive carried on a releasable liner. The device includes means for severing the supply of strip adhesive to form a predetermined length of adhesive, for positioning the length of adhesive on an application surface of a pressure foot, for providing relative movement between the pressure foot and a support surface to press the length of adhesive into contact with an object positioned on the support surface, and for transferring the length of adhesive from the liner to the object.

3,765,993

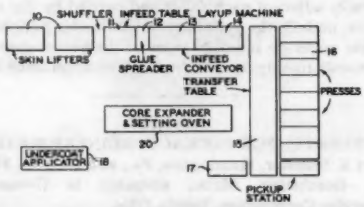
LAYUP MACHINE FOR ASSEMBLING PANELS HAVING A PAIR OF SKINS AND A CORE

Samuel L. Raffensparger; Colin D. Burgess, and J. B. Crawford, all of Longwood, Fla., assignors to Ramar Mfg. Co. of Florida, Inc., Longwood, Fla.

Filed Feb. 22, 1971, Ser. No. 117,322

Int. Cl. B32b *31/04;* **B65g** *57/00;* **B65h** *39/02*

U.S. Cl. 156—563 **7 Claims**



A layup machine for assembling panels having a pair of skins and a honeycomb core having a table for stacking panels during assembly which table moves in a vertical direction in increments as the panels are stacked thereon and which table may be raised to remove the assembled panels. A pair of skins, such as sheets of plywood, are fed to the layup machine on knife rollers, after adhesive has been applied thereto and honeycomb core material is placed in the machine. The skins and panels are aligned relative to each other and to the table and at the same time are placed on the table so that the bottom skin will contact and become the top skin of one panel on the table, while the top skin will become the bottom skin for the next panel. Once a stack of panels has been accumulated on the table, they are removed and placed in presses for curing of the adhesive to form a stack of panels. The table is provided with a horizontal feed for removing stacks of panels and the apparatus provides for each of the dropping and aligning means to be moved out of the way for removing a stack of panels from the layup machine.

3,765,994

INDICIA BEARING, ANODIZED LAMINATED ARTICLES

Harold J. Quaintance, Fairview Park, and Eugene Wainer, Shaker Hts., both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed Dec. 7, 1971, Ser. No. 205,493

Int. Cl. B32b *15/08;* **B44f** *1/00;* **G03c** *1/02*

U.S. Cl. 161—6 **14 Claims**

The production and use of indicia-bearing anodized layers from which the backing metal has been removed as trans-

parent or translucent elements in articles in which the layer may be laminated to a clear or translucent layer so that the information contained in the anodized layer can be read by direct illumination rather than by reflected light.

The information in the pores of this anodized article is preferably in the form of a metal image and of a metal selected from the group consisting of silver, gold, platinum and palladium which is preferably silver and which may be intensified by the electroless deposition of other metals thereon, such metals being selected from the group consisting of nickel, cobalt, iron, copper, chromium, gold, silver, platinum, palladium and mixtures thereof.

Products of special interest include edge lighted panels, microfilm, microfiche, photomasks, and printed circuits.

3,765,995

FLOWER BOWLS

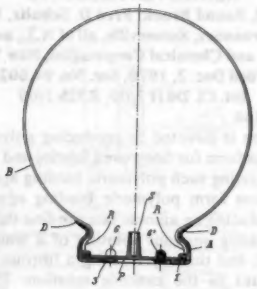
Jean Baptiste Perrin, 1, passage Gastaud, Nice, France

Filed Jan. 25, 1971, Ser. No. 109,228

Claims priority, application France, Sept. 2, 1970, 7032501

Int. Cl. A47g *7/00*

U.S. Cl. 161—18 **5 Claims**



A flower bowl constituted by a water-filled globe containing a flower and the refilling of which is obtained through normally closed openings formed in its covering plate, the fluid-tightness of which latter is ensured by a rubber annulus provided with a depending lug and with an inner peripheral rib fitted within the gap between the covering plate and the cooperating edge of the opening in the globe.

3,765,996

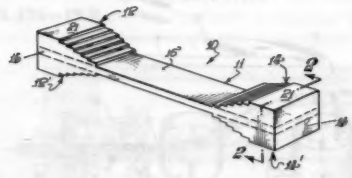
UNIDIRECTIONAL TENSILE TEST SPECIMEN INCORPORATING INTEGRATED LOAD PADS

Henry Lawrence Munyon, San Diego, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Apr. 3, 1972, Ser. No. 240,552

Int. Cl. B32b *3/00*; G01n *3/00*

U.S. Cl. 161—39 **10 Claims**



A test specimen which is particularly suitable for testing the tensile strength of high strength, but brittle fibers incorporated in a resin matrix in unidirectional laminates. Each test specimen comprises a flat, unidirectional laminate with integrated loading pads at each end of the unidirectional laminate. The loading pads are made integral with the unidirectional laminate by: (1) employing substantially the same resin in the pads as is present in the flat laminate; (2) employing different reinforcing within each pad with the fibers on the inner side of each pad being the same as those present in the unidirectional laminate and with the fibers on the outer side of each pad being formed from generally high strength, non-brittle material to withstand the crushing action of test machine jaws; and (3) by assembling the uncured components of the specimen and curing them in a single curing step without an additional adhesive.

The ratio of brittle/non-brittle fibers in the pads is between about 1:2 and about 2:1.

3,765,997

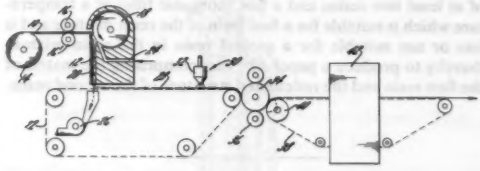
LAMINATE

Charles E. Dunning, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 882,257, Dec. 4, 1969, Pat. No. 3,692,622, which is a continuation-in-part of Ser. No. 783,877, Dec. 16, 1968, abandoned. This application May 20, 1971, Ser. No. 145,545

Int. Cl. B32b *3/00*

U.S. Cl. 161—141 **7 Claims**



A laminate with improved aesthetic attributes is disclosed. The laminate comprises an air laid web of cellulosic fibers containing a pattern of highly compacted spot-bonded areas and fluffy mound regions of substantially unbonded fibers disposed between the bonded areas. The cellulosic web is united to a network of reinforcing elements, such as a scrim, drafted fiber web, or continuous filament web, with a layer of open patterned adhesive.

3,765,998

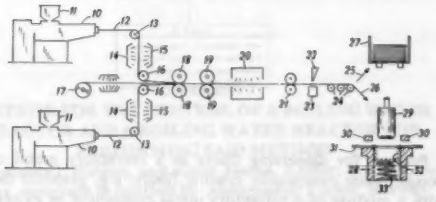
SHAPABLE FIBER-REINFORCED LOW MOLECULAR WEIGHT POLYETHYLENE TEREPHTHALATE

Hendrikus J. Oswald; Dusan C. Prevorsek, both of Morristown; Paul J. Koch, Mount Freedom, and Leon Segal, Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,450

Int. Cl. B32b *5/16*

U.S. Cl. 161—170 **3 Claims**



Glass fiber-reinforced thermoplastic polymer composite sheets are formed using semicrystalline polymers that have their glass transition temperature above room temperature and may be cold formed, i.e., shaped in a cold mold when preheated outside the mold. Glass-reinforced low molecular weight polyethylene terephthalate, or blends thereof, may be shaped in a cold mold, and exhibit excellent performance.

3,765,999

SYNTHETIC PAPER

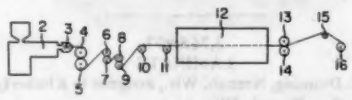
Tokashi Toyoda, Yokkaichi, Japan, assignor to Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo, Tokyo-To, Japan

Filed Dec. 28, 1970, Ser. No. 101,574

Claims priority, application Japan, Dec. 28, 1969, 44/105111

Int. Cl. B32b *5/16*

U.S. Cl. 161—170 **9 Claims**



A synthetic paper comprising a paper-like layer, which layer comprises a film-like matrix of a first resin and a reticulated structure consisting of fibrillated fibers made of a second resin dispersed in the matrix, and which layer contains a fine inorganic filler and voids therein. This paper is produced by drawing or stretching a drawable or stretchable sheet of a mixture of at least two resins and a fine inorganic filler at a temperature which is suitable for a first resin of the resin mixture and is less or not suitable for a second resin in the resin mixture thereby to produce a paper-like film comprising the matrix of the first resin and the reticulated structure of the second resin.

3,766,000

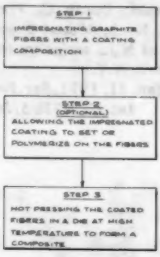
LOW THERMAL EXPANSION COMPOSITES

James O. Gibson; Robert L. Schumacher, both of Richland, and Kay L. Myler, Benton City, all of Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 2, 1970, Ser. No. 15,525

Int. Cl. C04b *35/70*

U.S. Cl. 161—170 **4 Claims**


STEP 1
IMPREGNATING GRAPHITE FIBERS WITH A COATING COMPOSITION
STEP 2 (OPTIONAL)
ALLOWING THE IMPREGNATED COATING TO SET OR POLYMERIZE ON THE FIBERS
STEP 3
HOT PRESSING THE COATED FIBERS IN A DIE AT HIGH TEMPERATURES TO FORM A COMPOSITE

Process for dispersing fibers in a refractory metal compound phase comprising coating fibers, e.g. graphite fibers, with a mixture of a refractory metal compound of extremely small particle size, e.g. NbC of 0.02 micron size, and sufficient binder, e.g. polymerizable furfuryl alcohol and maleic anhydride, to form a slurry, forming the coated fibers to the desired shape and heating the formed coated fibers at high temperatures in the range of about 40% to about 98% of the melting point of the refractory compound, e.g. about 3,000°C, to form a composite. The article produced by the above process is characterized by low thermal expansion values.

3,766,001

RECLAIMING PULP FROM WASTE PAPERS BY TREATING WITH A SOLUTION OF SODIUM HYDROXIDE, SODIUM CARBONATE, SODIUM OR AMMONIUM BICARBONATE, AND SODIUM BORATE

C. Roy Gleason, Chicago, and Gordon A. Thomas, Wilmette, both of Ill., assignors to World-Wide Paper Reclamation, Inc., Chicago, Ill.

Filed Aug. 17, 1971, Ser. No. 172,600

Int. Cl. D21b *1/08, 1/32;* **D21c** *5/02*

U.S. Cl. 162—8 **18 Claims**

The reclamation of purified and reusable pulps from various types of waste papers by first shredding the paper into fine pieces, boiling the shredded paper in a chemical solution containing an alkali metal hydroxide, an alkali metal carbonate an alkali metal bicarbonate and sodium borate, water washing the chemicals from the cooked paper and then bleaching the pulp with a chemical bleach at elevated temperature. The chemicals in the solution are believed to react to form sodium borocarbonate as a reactive compound.

3,766,002

NONWOVEN PRODUCTS

Donald S. Greif, Bound Brook; Fred D. Schultz, Plainfield, and Henry R. Hernandez, Somerville, all of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,602

Int. Cl. D01f *7/00;* **B32b** *3/00*

U.S. Cl. 162—146 **10 Claims**

This invention is directed to producing polymeric binding agents in fibrous form for nonwoven fabrics and for nonwoven fabrics incorporating such polymeric binding agents in fibrous form, the fibrous form polymeric binding agents being obtained by introducing an anionic latex in fine thread-like form into a precipitating aqueous solution of a water-soluble cationic polymer, and thereby forming a fibrous precipitate of the anionic latex in the cationic solution. The nonwoven fabrics produced are characterized by their unusually high strength.

3,766,003

PROCESS FOR MANUFACTURING ENDLESS FIBER WEBS FROM INORGANIC FIBER SUSPENSIONS

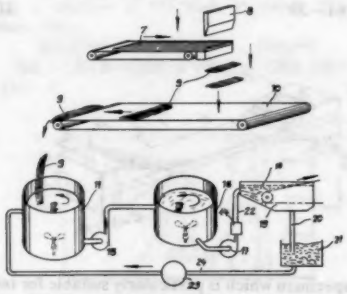
Wolfgang Schuller, and Harald Hohlfeld, both of Wertheim, Germany, assignors to Werner Hugo and Wilhelm Schuller, Munich-Grunwald, Germany

Filed Mar. 2, 1972, Ser. No. 231,341

Claims priority, application Germany, Mar. 5, 1971, P 21 10 599.7

Int. Cl. C03b *37/02;* **D21h** *5/18*

U.S. Cl. 162—156 **6 Claims**



In the process of manufacturing flat fibrous structures from suspensions of fibers by depositing a suspension of such fibers

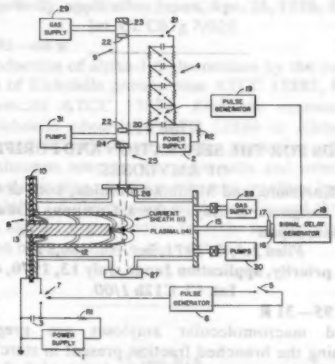
onto a moving permeable surface such as an endless sieve or belt wherein the fibrous suspension has been prepared from fibrous structures formed of a plurality of fibers which have been obtained by drawing a flowing glass melt, followed by chopping of the drawn fibers to form the fiber structures of predetermined length, the improvement in accordance with the invention of preparing the fiber suspension from fiber structures obtained by directing jets of liquid onto the glass fibers drawn from the glass melt and which are being wound onto the periphery of a rotating drum in a parallel arrangement and which after a certain layer thickness thereof has been obtained are cut to a predetermined length with the fibers still being in the moistened state.

3,766,004

LASER ASSISTED NEUTRON GENERATOR

Thomas G. Roberts; Romas A. Shatas; Harry C. Meyer, III, and John D. Stettler, all of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 19, 1971, Ser. No. 163,793
Int. Cl. B21b *1/00*
U.S. Cl. 176—1 **1 Claim**



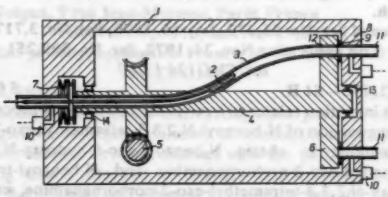
A high density pulsed plasma generator produces a high temperature plasma which is sensed by a photo switch which in turn triggers the operation of a high energy pulsed laser. The frequency of the laser light is such that the plasma will absorb it.

3,766,005

DEVICE FOR THE MECHANICAL SELECTION OF REACTOR MEASURING CANALS

Wilhelm Erkens, Neu Isenburg, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany

Filed May 19, 1971, Ser. No. 144,786
Claims priority, application Germany, May 22, 1970, P 20 24 992.7; May 22, 1970, P 70 19 080.6
Int. Cl. G21c *17/10*
U.S. Cl. 176—19 R **7 Claims**



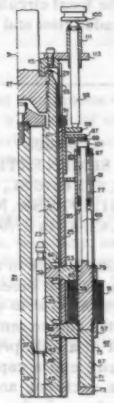
A device having a housing on which are attached a plurality of measuring canals arranged in a circle. Within the housing is a disc having a bore. The disc is mounted rotatably such that its bore may sweep over the various measuring canals arranged in the circle. The disc may be stopped for the registering of its bore with any one of the canals, whereby a selecting tube connected to the bore of the disc is placed in communication with a particular measuring canal for the introduction into the measuring canal of a sensor for taking measurements. The gap between disc and housing is sealed around the bore and measuring canals.

3,766,006

RAPIDLY REFUELABLE NUCLEAR REACTOR

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1970, Ser. No. 53,201
Int. Cl. G21c *7/08*
U.S. Cl. 176—36 R **5 Claims**



A nuclear reactor in which the control rods are held withdrawn or retracted from the fuel by a permanent magnet during refueling. The reactor includes a missile shield which restrains the control rod units from being ejected upwardly during normal operation of the reactor. During refueling the shield is retracted. During normal operation the control rods, when withdrawn, are held by an electromagnet whose coil may be readily deenergized for rod insertion at any time. During refueling the retraction of the shield causes a permanent magnet to replace the electromagnet core.

3,766,007

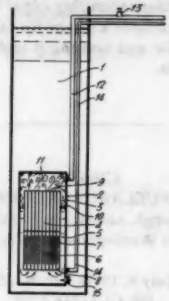
METHOD FOR THE CONTROL OF A BOILING WATER REACTOR AND A BOILING WATER REACTOR FOR PERFORMING SAID METHOD

Erik Rolstad, Halden, and Einar Jamne, Kjeller, both of Norway, assignors to Institutt for Atomenergi, Kjeller, Norway

Filed Mar. 31, 1970, Ser. No. 29,338
Int. Cl. G21c *15/26*
U.S. Cl. 176—56 **6 Claims**

The invention relates to the control of a boiling water reactor in which the water circulates by natural convection in the reactor tank through the core, a riser above the core and a downcomer. By varying the water level in the downcomer, the flow rate of circulation and thereby the void fraction in the

core and the reactivity are changed. The water level in the downcomer may be adjusted by transferring water to or from



an auxiliary reservoir. The local circulation flow rate may be influenced by having a graded riser and by the use of nozzles.

3,766,008

EQUINE SEMEN EXTENDER

Louis Everett Macomber, 403 Byrd St., Centralia, Wash.

Filed Mar. 31, 1970, Ser. No. 24,382
Int. Cl. A01k 2/00
U.S. Cl. 195—1.8 **8 Claims**

The process of extending the life in the uterus of a mare of sperm cells produced by natural breeding. The extension in life is achieved by insertion prior to natural breeding of an equine semen extender, the equine semen extender consisting of 0.5–2 parts by weight of a milk product, 0.05–2 parts by weight of a sugar nutrient, and a capsule consisting of 2–4 parts by weight gelatine enclosing and containing the milk product and sugar nutrient.

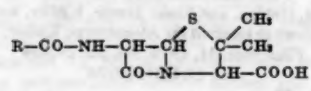
3,766,009

PROCEDURE FOR ENZYMATIC PRODUCTION OF SEMI-SYNTHETIC PENICILLINS

Eupremio Vitale, and Guido Guerra, both of Bologna, Italy, assignors to Alfa Farmaceutici S.p.A., Bologna, Italy

Filed Nov. 10, 1971, Ser. No. 197,513
Claims priority, application Italy, Nov. 7, 1970, 3608 A/70
Int. Cl. C12d 9/00
U.S. Cl. 195—29 **11 Claims**

A process for the enzymatic hydrolysing of diacyl-penicillins to semi-synthetic penicillins of the general formula:



The hydrolysis takes place in the presence of the enzyme penicillin-acylase produced by microorganisms.

3,766,010

METHOD FOR CONTROLLING FERMENTATION PROCESS

Shigeho Ikeda; Ayaaki Ishi-Zaki, both of Kawasaki, and Yoshio Hirose, Fujisawa, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Aug. 16, 1972, Ser. No. 281,043
Claims priority, application Japan, Aug. 26, 1971, 46/65453; Sept. 14, 1971, 46/71433
Int. Cl. C12b 1/20
U.S. Cl. 195—30 **4 Claims**

In a fermentation medium, in which an organic acid is consumed as a carbon source by a microorganism and is added to the medium at a rate to maintain a set pH value, the concentration of the acid is held within limits required for optimum fermentation conditions by varying the concentration of bicarbonate ions in the medium. The bicarbonate concentration is increased at excessive organic acid concentration by increasing the partial pressure of carbon dioxide in the fermentation vessel or by raising the set pH limit at which the organic acid is fed to the medium. The bicarbonate concentration is reduced at insufficient organic acid concentration by decreasing the partial carbon dioxide pressure in the fermentation vessel or by lowering the set pH limit.

3,766,011

METHODS FOR THE SEPARATION AND PURIFICATION OF AMYLOSES

Masashi Kurimoto, and Mikihiko Yoshida, both of Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan

Filed July 7, 1971, Ser. No. 160,513
Claims priority, application Japan, July 13, 1970, 45/61274
Int. Cl. C12b 1/00
U.S. Cl. 195—31 R **11 Claims**

Purified macromolecular amyloses are prepared by debranching the branched fraction present in starch, namely amylopectin, with the employment of alpha-1,6-glucosidases after gelatinizing the starch by heating, freezing the resultant, thawing the frozen product, heating the thawed product to a temperature lower than 70°C, eluting the low molecular amyloses, and then removing the retrograded starch thus formed in order to purify the macromolecular amyloses.

3,766,012

METHOD FOR THE MICROBIOLOGICAL OXYGENATION OF N-BENZOYL-N,2,3,3-TETRAMETHYL-EXO-2-NORBORNANAMINE

Milton E. Herr, Kalamazoo; Herbert C. Murray, Hickory Corners, and Gunther S. Fonken, Charleston Township, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 55,272, July 15, 1970, Pat. No. 3,717,650.
This application Nov. 24, 1972, Ser. No. 309,251
Int. Cl. G12d 13/00
U.S. Cl. 195—51 R **5 Claims**

This invention relates to a novel microbiological process for the oxygenation of N-benzoyl-N,2,3,3-tetramethyl-exo-2-norbornanamine to obtain N-benzoyl-exo-6-hydroxy-N,2,3,3-tetramethyl-exo-2-norbornanamine and N-benzoyl-trans-7-hydroxy-N,2,3,3-tetramethyl-exo-2-norbornanamine, each of which are chemically converted to novel derivatives. These novel bioconversion products and their derivatives are active hypotensive agents and central nervous system stimulants.

3,766,013

PREPARATION OF WATER-INSOLUBLE CARRIER BOUND ENZYMES

Peter Salvatore Forgione, Stamford, Conn., and Rocco Alberto Polistina, Port Chester, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 24, 1971, Ser. No. 174,550
Int. Cl. C07g *7/02*
U.S. Cl. 195—63 10 Claims

Water-insoluble, catalytically active, carrier bound enzyme materials physically dispersed throughout the interstices of the network of interconnected, interwoven fibers of polytetrafluoroethylene, and a method for their production, are disclosed.

3,766,014

PRODUCTION OF ALPHA-1,6-GLUCOSIDASES

Kazuo Masuda, and Kaname Sugimoto, both of Okayama, Japan, assignors to Hayashibara Company, Okayama-shi, Okayama, Japan

Filed Apr. 23, 1971, Ser. No. 137,023
Claims priority, application Japan, Apr. 25, 1970, 45/35712
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R 2 Claims

The production of alpha-1,6-glucosidase by the cultivation of a strain of Klebsiella pneumoniae ATCC 13883, *Klebsiella rhinoscleromatis* ATCC 13884, *Klebsiella ozaenae* ATCC 13885, *Klebsiella edwardsii* ATCC 13886 or *Klebsiella rubiacearum* ATCC 15574 on media consisting of carbon sources, nitrogen sources, inorganic salts and others under aerating and agitating conditions thereby resulting in accumulation of alpha-1,6-glucosidase on the media and the separation of the alpha-1,6-glucosidase from the media following the purification of the alpha-1,6-glucosidase.

3,766,015

PRESERVATION OF BOVINE STOMACHS FOR RENNET EXTRACTION

Richard B. Dardas, Gales Ferry, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,357
Int. Cl. A22c *18/00*; A23b *1/00*
U.S. Cl. 195—66 1 Claim

High recovery yields of rennet are obtained from calf and adult bovine stomachs packed in a solid salt selected from the group consisting of sodium sulfate, potassium sulfate, ammonium chloride and ammonium sulfate, and stored under refrigeration.

3,766,016

APPARATUS FOR DISTRIBUTING A LIQUID VOLUME INTO A NUMBER OF RECEPTACLES

Jean Guigan, 9 rue Jean-Mermoz, Paris, France

Filed Nov. 9, 1970, Ser. No. 87,681
Claims priority, application France, Nov. 12, 1969, 6938776
Int. Cl. C12k *1/10*
U.S. Cl. 195—140 8 Claims

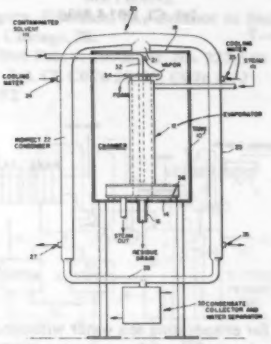
An analytical device for distributing equal portions of a certain liquid volume into a plurality of vessels, the device having a groove-shaped circular channel with the partially communicating vessels attached to its outer rim. Sufficient liquid is fed to the channel and allowed to overflow into the communicating parts of the vessels from where the individual portions of the liquid are forced into the non-communicating parts of the vessels by rotation of the device.

3,766,017

SYNTHETIC SOLVENT STILL

Harry A. Moss, Cynwyd, Pa., assignor to Helen S. Moss and Harry A. Moss, Cynwyd, Pa., part interest to each

Filed Nov. 4, 1971, Ser. No. 195,735
Int. Cl. B01d *3/00*; F28b ; B01b *1/02*; B01d *19/02*, *1/00*, *19/00*
U.S. Cl. 202—187 2 Claims



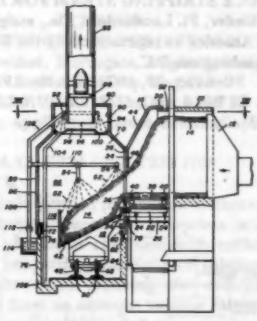
An Apparatus for the continuous distillation and recovery of cleaning fluid from a source of contaminated fluid has a chamber, a still within said chamber and a means to prevent "-boil over" of the apparatus.

3,766,018

COKE QUENCHING APPARATUS

Kurt Riechert, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany

Filed July 15, 1971, Ser. No. 162,822
Claims priority, application Germany, Aug. 3, 1970, P 20 38 495.6
Int. Cl. C10b *39/08*
U.S. Cl. 202—227 6 Claims



Apparatus for quenching coke without polluting the surrounding atmosphere, wherein a coke guide carriage has a conveyor-belt floor for transferring coke from an oven to a quench car through a tubular guide, and the quench car being contained within a hood having top, end, and side walls for confining smoke, fumes, and dust generated by the movement of the coke from the oven to the quench car; the hood including a sprinkling system for spraying water onto the coke in the quench car and the hood including vent means in the top wall which vent means includes a stack having a gas inlet end that is enclosed within a gas plenum chamber having a water sprinkling system therein for providing a curtain of water around the inlet end for washing the gas as it enters the stack, whereby the conveyor belt, the sprinkling system and the vent cooperate to minimize any smoke and dust created.

3,766,019

$MGCO_3$ ADDITION TO $CASO_4$ CONTAINING SEA WATER TO PREVENT CORROSION

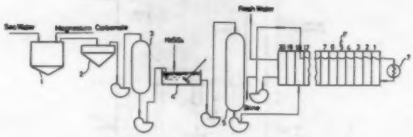
Hisanobu Tabata; Norimasa Tabata, both of No. 968, Kou, Ohgoshi-machi, and Rokuro Nakajima, No. 1831 Ohyabu-cho, all of Sakaide-shi, Japan

Filed Dec. 3, 1970, Ser. No. 94,726

Claims priority, application Japan, Dec. 15, 1969, 44/100773

Int. Cl. B01d *3/06*

U.S. Cl. 203—7 4 Claims



A process for evaporating sea water without causing corrosion of the steel materials of the apparatus comprising reacting calcium sulfate dissolved in the sea water with magnesium carbonate to such an extent that 5 to 10 percent of the original Ca^{++} remains dissolved while the formed calcium carbonate is removed by filtration, adjusting the pH of the treated sea water with a mineral acid to pH 5.0 to 5.5, deaerating it with the rate of deaeration exceeding 90 percent and then introducing the sea water into a stage of a flash evaporation apparatus the temperature of which is lower than 80°C.

3,766,020

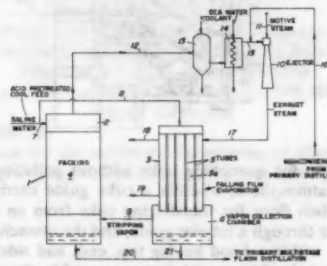
STEAM JET EJECTORS TO REDUCE PRESSURE IN AND PRODUCE STRIPPING STEAM FOR DEAERATOR

Everett N. Sieder, Ft. Lauderdale, Fla., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 27, 1971, Ser. No. 192,842

Int. Cl. B01d *3/00, 1/22, 3/02, 1/00, 3/08, 3/10*

U.S. Cl. 203—26 7 Claims



Predeaeration system in which a stream of cool saline water is split into two streams, one being sent to a deaerator vessel, the other being sent to an LTV evaporator to provide gas stripping vapor for the deaerator. One or more steam jet ejectors reduce the pressure in the deaerator and remove noncondensibles from a primary distillation system. Exhaust motive steam from the ejectors is used to heat the LTV evaporator.

3,766,021

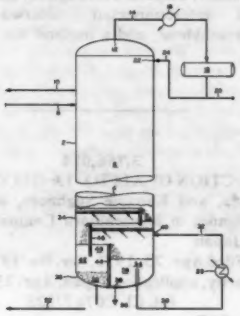
PROCESS AND APPARATUS FOR FRACTIONATOR REBOILING WITH MINIMIZED FOULING BY CENTIFUGING AND DECANTING

John H. Randall, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 3, 1971, Ser. No. 139,455

Int. Cl. C07c *3/52*

U.S. Cl. 203—39 6 Claims



Process and apparatus for minimizing reboiler fouling wherein a liquid effluent from the lower zone of the fractionator is charged to a first compartment of the fractionator bottom section with a heavier fouling component phase being separated and removed from a lighter hydrocarbon phase. The lighter hydrocarbon phase is decanted from the first compartment by overflowing into a second compartment and removed to an external reboiler wherein it is vaporized, at least in part, before being returned to the fractionator lower zone.

3,766,022

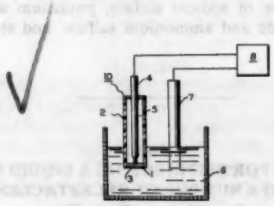
METHOD FOR MEASURING AN ACTIVITY OF CHROMIUM(III) IONS

Kenji Higashiyama, and Hiroshi Hirata, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Feb. 28, 1972, Ser. No. 229,910

Int. Cl. G01n *27/30, 27/26, 27/46*

U.S. Cl. 204—1 T 6 Claims



A method for measuring an activity of chromium(III) ions comprises a selective electrode and a reference electrode immersed in a solution containing chromium(III) ions, said selective electrode including a disc in a batch composition which comprises a combination of nickel chalcogenide and at least one member selected from the group consisting of silver selenide and silver telluride or in a batch composition which comprises a combination of silver sulfide and at least one member selected from the group consisting of nickel selenide and nickel telluride.

3,766,023

COLORING STAINLESS STEELS

Anthony Christopher Hart, Dudley, England, assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 114,357, Feb. 10, 1971. This application May 11, 1972, Ser. No. 252,459

Claims priority, application Great Britain, May 26, 1970, 25215/70; Jan. 11, 1971, 1245/71

Int. Cl. C23f 17/00; C23b 5/06

U.S. Cl. 204—38 B 9 Claims

Films or coatings on corrosion resistant chromium-containing alloys, e.g., stainless steel produced by immersion in solutions of chromic acid, are electrolytically treated to increase the coating's resistance to abrasion. In the electrolytic treatment, the coated chromium-containing metal is made the cathode in a bath capable of depositing metallic chromium and the treatment is conducted for a time and under cathodic conditions insufficient to produce a visible white deposit of metallic chromium.

3,766,024

ACIDIC BATH FOR ELECTROPLATING ZINC

Hidehisa Yamagishi, Yokohama, and Tsutomu Watanabe, Tokyo, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 11, 1972, Ser. No. 296,636

Claims priority, application Japan, Nov. 16, 1971, 46/91695

Int. Cl. G01n 5/12, 5/46

U.S. Cl. 204—55 R 2 Claims

The acidic bath for electroplating zinc comprises an aqueous solution of 200 to 650 g/l of zinc sulfate, 50 to 200 g/l of zinc chloride, 10 to 70 g/l of ammonium chloride, 5 to 30 g/l of sodium succinate, and 0.1 to 10 g/l of nicotinic acid amide and/or 0.01 to 0.1 g/l of ethoxylated-α-naphthol sulphonic acid.

3,766,025

REPAIRING ELECTROLYTIC CELLS

Gaston C. Efird, Albermarle, N.C., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed June 30, 1972, Ser. No. 268,180

Int. Cl. C22d 3/12

U.S. Cl. 204—67 4 Claims

Holes which develop in the base of an electrolysis chamber in an electrolytic cell and expose a metal member in the said base to contact by liquid material in the chamber are repaired during operation of the cell by feeding into the liquid a granular material which settles through the liquid and plugs the hole.

3,766,026

ELECTROLYTIC PROCESS FOR THE RECOVERY OF NICKEL, COBALT AND IRON FROM THEIR SULFIDES

Paul R. Kruesi, Golden, Colo., assignor to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

Filed May 10, 1972, Ser. No. 251,940

Int. Cl. C22d 1/14, 1/24; C01b 17/06

U.S. Cl. 204—113 15 Claims

A pollution-free process for the electrolytic dissolution of sulfide concentrates of the metals of Group VIII of the Periodic Table in aqueous acidic media with the formation of metal ions and elemental sulfur followed by recovery of the metal ion from solution in the electrolyte media, the process characterized by certain critical process conditions, these being the use of:

1. an alkali metal and/or alkaline earth metal chloride electrolyte being above about 0.5N to saturation in chloride ion,
2. a sulfide feed of average particle size smaller than 60 mesh U.S. Standard,
3. a pH range of about 0.01 – 3.9,
4. an electrolyte temperature of about 50°C – 105°C, and
5. an anode current density above about 12 amperes/ft².

3,766,027

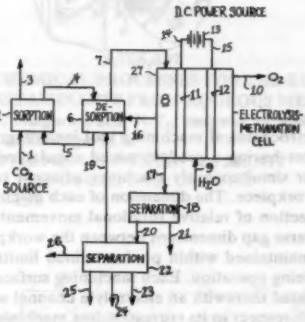
METHOD AND APPARATUS FOR CO_2 CONVERSION TO METHANE

Derek P. Gregory, Hinsdale, Ill., assignor to Institute of Gas Technology, Chicago, Ill.

Filed Feb. 4, 1972, Ser. No. 223,546

Int. Cl. C07b 29/06; C07c 1/12

U.S. Cl. 204—72 16 Claims



A process of fixation and conversion of carbon dioxide from the atmosphere or other sources to produce methane and oxygen. Carbon dioxide is scrubbed from a CO_2-containing source and separated by process of chemical concentration. A special cell is provided in which hydrogen is produced and reacted with the separated CO_2 at methanation conditions to produce methane.

3,766,028

ELECTROWINNING OF CHROMIUM METAL

John Cooper Crowther, Harrogate, England, assignor to Albright & Wilson Limited, Oldbury, England

Filed Mar. 30, 1972, Ser. No. 239,718

Claims priority, application Great Britain, Apr. 2, 1971, 8,522/71

Int. Cl. C22d 1/00; C23b 5/06

U.S. Cl. 204—105 R 4 Claims

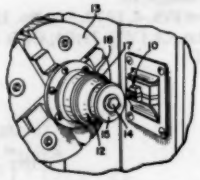
A method for the integrated production of chromium metal and a tanning composition which comprises acidifying an aqueous solution of sodium chromate with sufficient of an aqueous solution consisting essentially of sulphuric acid to form sodium dichromate, reducing the dichromate with sulphur dioxide to form an aqueous tanning solution of basic chromic sulphate and sodium sulphate, using a part of the tanning solution diluted to a concentration of from 40 to 180 g/l chromium as feed to a chromium electrowinning operation which comprises passing a current having a density of between 30 and 300 amps/sq. ft. through an electrolyte having a pH between 1.0 and 2.8 and a temperature between 27° and 80°C and thereby producing chromium metal, an acidic anolyte and a chromium lean catholyte, maintaining the anolyte and the catholyte in separate compartments, recycling the catholyte and combining it with the tanning solution, recycling the anolyte and adding it to the alkali metal chromate as part of the said aqueous solution consisting essentially of sulphuric acid to effect part of the acidification thereof, and recovering the chromium metal and part of the tanning solution as products, the proportion of chromium metal to chromium in the total products being less than 1:3.

3,766,029

ELECTROCHEMICAL MACHINING TOOL FOR MACHINING CONJUGATE SURFACES OF REVOLUTION

William Andrew Haggerty, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 19, 1969, Ser. No. 859,302
Int. Cl. B23p 1/04, 1/14
U.S. Cl. 204—129.5 5 Claims



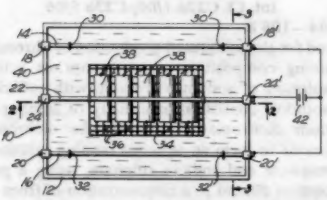
An electrochemical machining tool including two machining surfaces having a predetermined angular relationship to each other simultaneously machines adjacent surfaces on a rotating workpiece. The dimension of each machining surface in the direction of relative rotational movement is such that the transverse gap dimensions between the workpiece and the tool are maintained within predetermined limits throughout the machining operation. Each machining surface on the tool has associated therewith an electrolyte channel which is positioned with respect to its corresponding machining surface so that electrolyte flows from each channel and across the machining surface toward the smallest radial gap dimension. Both machining surfaces are supplied with electrical current from the same power source.

3,766,030

METHOD OF ELECTROPOLISHING

Howard M. Greene, Canoga Park, Calif., assignor to Muroc Products Corp., Van Nuys, Calif.

Filed Dec. 27, 1971, Ser. No. 212,566
Int. Cl. C23b 3/06, 1/00
U.S. Cl. 204—129.9 13 Claims



A method of electropolishing utilizing a solution comprising a major amount of phosphoric acid, a minor amount of oxidizing component selected from chromium sesquioxide and a trivalent titanium oxide, and a minor amount of current supporting electrolyte. In particular embodiments, the electrolyte comprises ions of nickel and ions of one or more of iron and copper. The used bath can be reconstituted by the addition of phosphoric acid to adjust its specific gravity and may be purged of contamination by the addition of nickelous carbonate or by cathodic reduction. Use of the bath provides a monomolecular layer of metal oxide on the processed article.

3,766,031

PROCESS FOR NON-DESTRUCTIVE RADIATION DEGRADATION OF POLYTETRAFLUOROETHYLENE

Joseph A. Dillon, Huntingdon Valley, Pa., assignor to Garlock, Inc., Palmyra, N.Y.

Continuation of Ser. No. 39,894, May 22, 1970. This application Apr. 10, 1972, Ser. No. 242,864
Int. Cl. C08d 1/00; C08f 1/16
U.S. Cl. 204—159.2 3 Claims

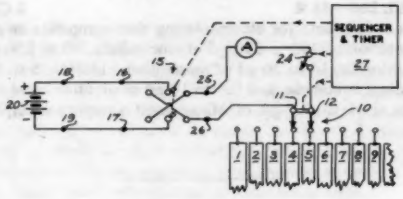
Solid polytetrafluoroethylene, sintered or unsintered, is degraded non-destructively by irradiation at a dosage level in the range of from about 5 megarads to about 25 megarads. The irradiated polytetrafluoroethylene is readily comminuted and exhibits the characteristic low coefficeint of friction of polytetrafluoroethylene.

3,766,032

METHOD FOR CONTROL OF MARINE FOULING

Andrew S. Yeiser, 302 Cleveland Dr., Huntington Beach, Calif.

Filed July 19, 1971, Ser. No. 163,883
Int. Cl. C23f 13/00
U.S. Cl. 204—147 8 Claims



An electrical apparatus and method for eliminating the fouling of boat bottoms and the like by marine growth. The underwater surface is sheathed with strips of a metal such as stainless steel. An electric current is passed between adjacent strips or areas, preferably for short periods of time on a regular "maintenance" schedule, e.g., 30 amperes per square foot for a few seconds every two days. The sheathing may be of 0.020" stainless steel in 3-inch wide strips spaced 0.1" apart. Test panels in sea water are found to remain clean and bright after six months immersion when so energized, while identical panels to which no current is applied become heavily fouled. Ions produced by electrolysis close to the sheathed surface move at relatively high velocities, and are found to kill the small organisms that settle on the surface. No persistent toxic chemicals such as mercury compounds are released into the water, and only minute quantities of dead organic matter are released at any one time.

3,766,033

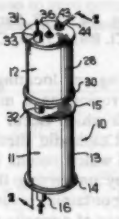
METHOD FOR TREATING SEWAGE

William R. Preis, River Edge, and William Cole, Jr., Oakland, both of N.J., assignors to Cole Resedevel Corp., Fairlawn, N.J.

Division of Ser. No. 106,162, Jan. 13, 1971, Pat. No. 3,728,245. This application Mar. 9, 1972, Ser. No. 233,056
Int. Cl. C02b 1/82; C02c 5/12
U.S. Cl. 204—149 10 Claims

This disclosure relates to a method for treating domestic and/or industrial water waste to render the same into a condi-

tion for either further re-use in industrial processing or for outflow into natural waters. The treatment utilizes the principles of electrolysis to ionize the water utilizing the sodium of



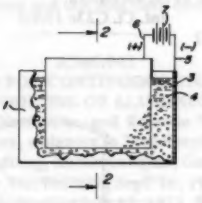
sodium chloride to form sodium hydroxide and the chloride as a bleaching agent. The treatment takes place in a simple two stage cell.

3,766,034

REMOVAL OF IONS FROM LIQUIDS

Preston Leonard Veltman, Severna Park, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Aug. 1, 1972, Ser. No. 277,008
Int. Cl. C02b *1/82*; C02c *5/12*
U.S. Cl. 204—149 **11 Claims**



An electrolytic process for removing ionic substances from liquids wherein the liquid is contacted with a bed of reactive electrode particles. The electrode particles comprise a compound which will react with the ionic substance to be removed and may be coated with an ion-permeable membrane. The process finds particular utility in the removal of impurities from water.

3,766,035

METHOD OF SEPARATING METALS FROM WASTE WATER

Minoru Ichiki, and Masahito Ishii, both of Tokyo, Japan, assignors to Mitsui Mining & Smelting Co., Ltd., Tokyo, Japan

Filed Sept. 6, 1972, Ser. No. 286,711
Claims priority, application Japan, Sept. 9, 1971, 46/69976
Int. Cl. C02c *5/12*; C02b *1/82*
U.S. Cl. 204—149 **4 Claims**

A method of separating metals contained in the waste water, which comprises the processes: the electrolysis of the waste water is conducted by adding an organic solvent and a nonionic surface active agent capable of emulsifying said organic solvent to the waste water containing such metals as Cd, Zn, Pb, Cu, Ni, Fe, Cr, Mn, Hg, Al, etc.; and the solid matters formed by the said electrolysis are made to float to be separated.

3,766,036

PROCESS FOR THE REMOVAL OF IONIC METALLIC IMPURITIES FROM WATER

James P. McKaveney, Claremont, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 125,878, March 18, 1971, abandoned. This application Mar. 6, 1972, Ser. No. 232,239
Int. Cl. C02b *1/82*; B01d *21/00*
U.S. Cl. 204—150 **35 Claims**

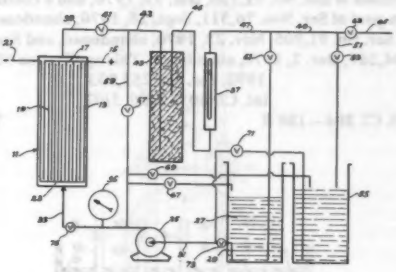
This invention discloses a process for removing ionic metallic impurities from aqueous solutions by contacting said solutions with one or more selected silicon-metal alloys having an overall electrochemical potential greater than the electrochemical potential of the ionic metals in their free metal form to be removed.

3,766,037

ELECTROCHEMICAL PROCESSES FOR THE REMOVAL OF CONTAMINANTS FROM AQUEOUS MEDIA

Sung Ki Lee, Niagara Falls, N.Y., assignor to Andco Incorporated, Cheektawaga, N.Y.

Filed Feb. 11, 1972, Ser. No. 225,417
Int. Cl. Co2c *5/12*; C02b *1/82*
U.S. Cl. 204—152 **17 Claims**



Contaminating anions are removed from aqueous media by reacting them indirectly with lead from an anode to produce an insoluble lead compound which is subsequently separated from the aqueous medium. The lead is obtained from an anode containing lead or an insoluble lead compound which reacts with an activating ion, such as acetate or chloride, to produce soluble lead ions, which subsequently react with the contaminant anion, e.g., chromate from a purge stream of cooling tower water or from rinses of chrome plated articles. Also described are electrolytic cells and apparatuses useful in the practice of the method.

3,766,038

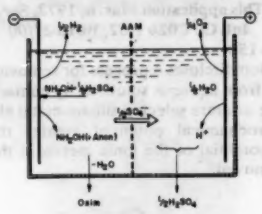
PRODUCTION OF CYCLOALKANONE OXIMES

Fritz Beck; Hugo Fuchs, both of Ludwigshafen; Kurt Kahr, Hambach, and Gerd Wunsch, Speyer, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 15, 1971, Ser. No. 208,062
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P **7 Claims**

A process for the production of cycloalkanone oximes by reaction of cycloalkanones with hydroxylammonium salts or mixtures thereof with ammonium salts and acids in aqueous solution. The free and combined acid is removed from the

mixtures by electrodialysis before, during or after the oximation. The reaction of the cycloalkanone to the oxime is



preferably carried out in the cathode chamber of an electrodialysis cell. Complete oximation of the cycloalkanone is achieved.

3,766,039

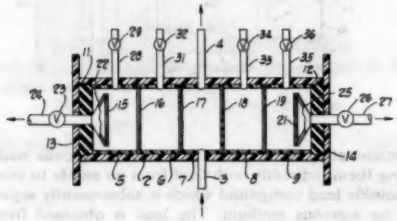
PROCESS FOR TREATMENT OF LIQUORS USING MULTI-COMPARTMENT BATHS

Allan F. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Division of Ser. No. 99,120, Dec. 17, 1970, and a continuation-in-part of Ser. Nos. 76,311, Sept. 28, 1970, abandoned, and Ser. No. 91,905, Nov. 23, 1970, abandoned, and Ser. No. 94,267, Dec. 2, 1970, abandoned. This application May 17, 1972, Ser. No. 253,933

Int. Cl. B01k *5/00, 5/02*

U.S. Cl. 204—180 R **7 Claims**



An improvement is shown in cell process and apparatus for the electrolytic separation of components from electrically-conductive liquor containing dispersed ionizable material electrodepositable on a deposition electrode to build substantial electrical resistance thereon and dissolved ionizing agent therefor, e.g., an aqueous dispersion of electrocoating paint. A primary electrode, charged from an external source, is maintained at each electrical extremity of a body of the liquor, and at least one secondary electrode pervious to ions of the liquor is interposed between the primary electrodes. The secondary electrodes compartment the body into a plurality of zones communicating with each other through such secondary electrodes. Electrical potential between the primary electrodes is applied with the potential between adjacent electrode pairs insufficient for causing electrodeposition on any of the secondary electrodes. An anolyte-enriched liquid and a catholyte-enriched liquid concentrate at the extreme compartments. If desired, the primary electrode opposite the deposition electrode also can be made porous for percolation of electrolyte solution through such primary electrode. Additionally, the deposition electrode can be made porous, and operated for electrodeposition of said ionizable material with the passage of same through such deposition electrode.

3,766,040

METHOD OF DETECTING AND LOCATING CORROSION SITES

Hadley W. Wellborn, Jr., RFD No. 2, Petrie Rd., Powder Springs, Ga.

Filed Nov. 24, 1972, Ser. No. 309,500

Int. Cl. B01k *5/00*; **C23b** *13/00*

U.S. Cl. 204—180 R **8 Claims**

Method of detecting and locating areas responsible for incipient galvanic corrosion on a metallic surface. Localized electrochemical cells which occur on metallic surfaces as a result of anodic and cathodic sites in contact with an electrolytic solution and which results in corrosion at such locations are detected by immersing the surface in an aqueous electrolytic solution containing a suspension of particles bearing an electrical charge of opposite polarity to the charge carried by the localized site. Particles in the suspension are attracted by the opposite polarity of the localized sites, if any, on the metallic surfaces, causing such particles to accumulate at the locations of the sites. These accumulations of particles remain on the metallic surface following withdrawal from the aqueous solution.

Coated metallic surfaces can be examined for the existence of pinholes, cracks, and other penetrating surface discontinuities by subjecting the metallic surface to an electrical charge of polarity opposite that of the particles suspended in solution.

3,766,041

METHOD OF PRODUCING PIEZOELECTRIC THIN FILMS BY CATHODIC SPUTTERING

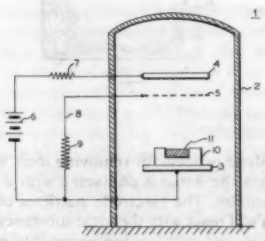
Kiyotaka Wasa, Nara-shi, Nara-ken, and Shigeru Hayakawa, Hirakata-shi, Osaka-fu, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 17, 1971, Ser. No. 181,535

Claims priority, application Japan, Sept. 29, 1970, 45/86013; Oct. 6, 1970, 45/88552

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **4 Claims**



An improved method of making piezoelectric thin films comprising zinc oxide having a hexagonal crystalline form by using a cathodic sputtering step capable of controlling the direction of crystallographic orientation in said piezoelectric thin films, characterized in that said cathodic sputtering step comprises co-sputtering of copper or aluminum with zinc in an oxidizing atmosphere.

3,766,042

CORROSION RATEMETER

Homer M. Wilson, Houston, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

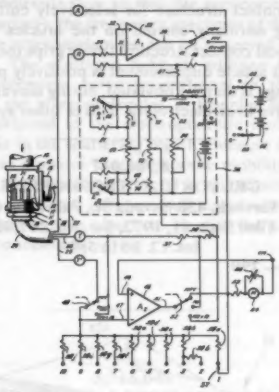
Filed Oct. 6, 1972, Ser. No. 295,629

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 C **12 Claims**

A corrosion ratemeter with test specimen, reference and third electrodes contactable by a corrodant. A differential amplifier connects to a direct current supply means including cir-

cuit common. The amplifier has a first input connected to the reference electrode, and a second input connected through a circuit means to the test specimen electrode, and an output connected to the third electrode. Second amplifier means connected to the test specimen electrode and circuit common for adjusting the circuit common to zero potential difference relative to the test specimen electrode thereby completing a current loop circuit from the output of the differential amplifier, between the test specimen and third electrodes, and circuit common. Readout means measure the output current in the current loop which creates a polarization potential between the reference and test specimen electrodes. Switching means also permit measurement of the freely corroding potential between the reference and test specimen electrodes.



3,766,043

APPARATUS FOR CONTINUOUS ETCHING AND ANODIZING OF ALUMINUM

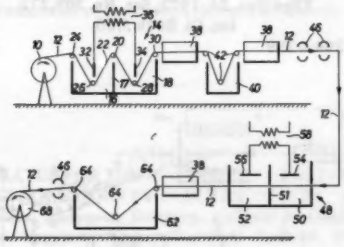
Helmut Friedrich Herrmann, and Rolando M. Dizon, both of Cologne, Germany, assignors to Metalloxyd Gesellschaft mit Beschrankter Haftung, Kolnbraunsfeld, Germany

Division of Ser. No. 762,806, Sept. 26, 1968, Pat. No. 3,632,486. This application July 12, 1971, Ser. No. 161,789

Claims priority, application Germany, Oct. 17, 1967, P 16 21 115.7The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl. C23b *5/68*

U.S. Cl. 204—207 **10 Claims**



Elongated aluminum bodies such as aluminum sheets, foils and the like, the term aluminum denoting not only pure aluminum but also aluminum alloys which lend themselves to electrolytic etching and anodizing, are continuously passed through two electrolytic cells to be etched in the first and anodized in the second cell, at least one of the two cells comprises two adjacent compartments each equipped with a stationary electrode and containing electrolyte. The other cell may be similarly constructed or may be a single compartment electrolytic cell including electrolyte and a stationary electrode wherein the elongated aluminum body passing therethrough forms the electrode of opposite polarity. Alternating current is applied to the double compartment cell and, if one of the electrolytic cells is of the single compartment type, direct current is applied thereto. The elongated aluminum body forms during its passage through the double compartment cell a bipolar conductor having portions within the respective compartments of this cell. It is possible in this manner, i.e., by utilizing two cells at least one of which being a two-compartment cell, to carry out etching and anodizing in a single continuous pass of the elongated aluminum body.

3,766,044

ELECTROLYTIC CELL SYSTEM INCLUDING UPPER AND LOWER REACTING CHAMBERS

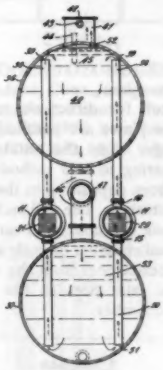
Gothe O. Westerlund, Vancouver, British Columbia, Canada, assignor to Chemeck Engineering Ltd., Vancouver, British Columbia, Canada

Filed June 28, 1971, Ser. No. 157,469

Claims priority, application Canada, June 26, 1970, 086626

Int. Cl. B01k *3/00*

U.S. Cl. 204—268 **1 Claim**

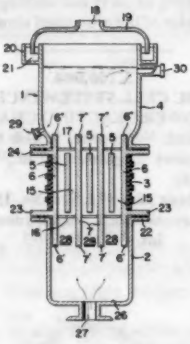


An electrolytic cell assembly and system is provided which includes two or more modular units, each being provided for throughflow of electrolyte and includes a plurality of parallel alternately spaced anodes and cathodes, with the anodes and cathodes occupying less than the entire cross-sectional area of each unit. The end plates of each of the modular units are respectively an anode end plate and a cathode end plate. The electrodes project, preferably at right angles, from the end plates, but in staggered spaced-apart relation, so that each anode electrode (with the exception of the end ones) can be disposed between a pair of adjacent cathode electrodes and vice versa. The end plates are provided with either anode electrodes or cathode electrodes projecting, preferably at right angles, from one face. Between adjacent modular units are intermediate plates which, in one variant, are imperforate and act as combined anode and cathode holding and current transmitting plates. The intermediate plates are provided both with anode electrodes projecting from one face and cathode electrodes projecting from the other face. In another variant, the intermediate plates are porous to permit the throughflow of electrolyte and products of electrolysis from one modular unit to the neighboring one. The system includes means attached to each unit to bring cell products to a common upper reacting chamber, means connecting the upper reacting chamber to a common lower reacting chamber, and means connected between the lower reacting chamber and the units for introducing contents of the lower reacting chamber into each unit.

3,766,045
ELECTROLYTIC CELL FOR ELECTROLYSIS OF SEA WATER

Tatsuo Itakura, Funabashi; Tetsuo Shoda, Ichikawa, and Takashi Yamamoto, Kasukabe, all of Japan, assignors to Daiki Engineering Co., Ltd., Tokyo, Japan

Filed Aug. 31, 1971, Ser. No. 176,486
Claims priority, application Japan, Sept. 8, 1970, 45/89243 (utility model)
Int. Cl. B01k 3/00
U.S. Cl. 204—275 1 Claim

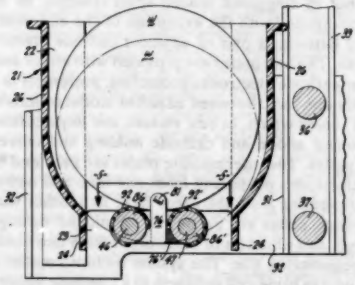


An electrolytic cell for direct electrolysis of sea water wherein the cathode plates are parallelly elongated upward and downward longer than the anode plates to prevent $Mg(OH)_2$ from adhering to said cathode plates and further prevent impurities from depositing in the cell to increase the efficiency of the electrolysis. The cell includes a feed chamber below the electrolysis chamber, and an electrolyte takeoff-precipitate withdrawal chamber directly above the electrolysis chamber, with the outlet port from the electrolysis chamber coincident with the inlet port to the electrolyte takeoff-precipitate removal chamber.

3,766,046
JIG HOLDER FOR CLAMPING ARTICLES IN PLACE DURING TREATMENT THEREOF

Alan G. Flint, San Jose, Calif., assignor to Industrial Modular Systems Corporation, Santa Clara, Calif.

Filed Mar. 23, 1972, Ser. No. 237,409
Int. Cl. B23p 1/02
U.S. Cl. 204—297 W 19 Claims



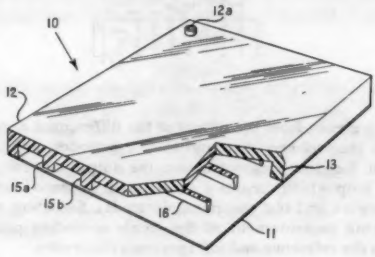
Improved apparatus for holding and positioning a plurality of articles, such as silicon wafers utilized in manufacturing electronic devices, during electrolytic etching. The apparatus comprises a jig holder for positioning one or more article carriers therein and includes means for insuring electrical contact between the jig holder and the individual articles to insure effective electrolytic etching. Use of article carriers obviates individual handling of articles so that a large number of articles may be easily and rapidly positioned in place in electrical contact with the jig holder.

The jig holder includes improved means for insuring electrical contact between the articles and the holder, such means including contact structure for selectively cutting through a film coating normally carried on the articles being etched. Such electrical contact structure firmly grips the individual articles so that article displacement is positively precluded, and article damage is thereby obviated, during movement of the jig holder relative to an electrolytic bath or other system.

3,766,047
GEL FOR ELECTROPHORESIS

Franklin R. Elevitch, 430 Nevada St., Palo Alto, Calif.

Filed Sept. 11, 1972, Ser. No. 287,853
Int. Cl. B01k 5/00
U.S. Cl. 204—299 20 Claims

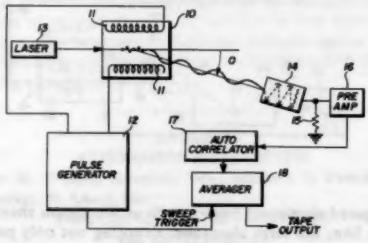


Permeable aqueous gel of a type suitable for electrophoretic separation of proteins and other components of biological fluids such as blood serum, such gel containing as the base component of the buffer system a low molecular weight amino alcohol, also apparatus containing such gel.

3,766,048
ANALYSIS OF POLYMER MIXTURES IN SOLUTION UTILIZING ELECTROPHORETIC LIGHT SCATTERING APPARATUS

Willis H. Flygare, Urbana, Ill., and Bennie R. Ware, Arlington, Mass., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Nov. 24, 1972, Ser. No. 309,272
Int. Cl. B01k 5/00
U.S. Cl. 204—299 13 Claims



An electrophoretic light scattering apparatus for determining the electrophoretic mobility and diffusion coefficient of a

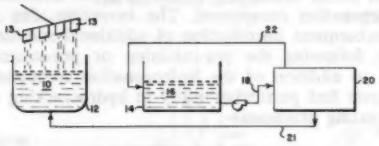
macromolecular polymer in solution is disclosed. More particularly, the charged macromolecules are driven through the solution by an electric field developed between two charged electrodes in a modified electrophoretic cell. The electric field is alternately enabled and disabled during the determination to prevent excessive heat build-up in the solution and the resultant convection of macromolecules which would distort the measurements. A laser provides an incident light beam which is passed through the cell perpendicular to the direction of the macromolecule flow so that the autocorrelation function or, alternatively, the frequency spectrum of the light scattered from the macromolecules can be observed at low scattering angles. The scattered light, in addition to having a frequency distribution curve proportional to the diffusion coefficient of the macromolecules, is Doppler shifted by an amount proportional to the electrophoretic mobility of the macromolecule in the scattering region. Because each species of polymers has a unique electrophoretic mobility and hence Doppler shift, the apparatus is useful in quantitatively analyzing a mixture of several different polymers in solution (e.g., life-like enzymes such as blood) to identify the polymers and their relative concentrations.

3,766,049

RECOVERY OF METAL FROM RINSE SOLUTIONS

Jack D. Smith, Boston, Mass., assignor to Process Research Incorporated, Cambridge, Mass.

Filed Aug. 26, 1971, Ser. No. 175,132
Int. Cl. B01d *13/02*
U.S. Cl. 204—301 **2 Claims**



A method of recovering valuable metals from rinse baths associated with electroplating processes. The recovery utilizes electrodialysis to concentrate the metal to a sufficiently high concentration that convenient recovery of the metal, e.g., nickel or copper, can be completed by handling the metal as an ion in a liquid phase and without the need to plate the metal out on an electrode or precipitate it in any solid form.

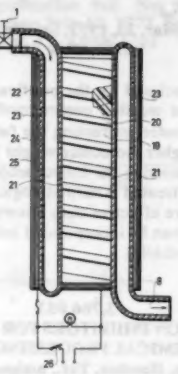
3,766,050

APPARATUS FOR THE TREATMENT OF FLUIDS OR SOLUTIONS BY ELECTRIC FIELDS

Istvan Pados, Budapest, Hungary, assignor to Chemolimpex Magyar Vegyiaru Kulkereskedelmi, Vallalat, Budapest, Hungary

Continuation-in-part of Ser. No. 639,209, May 17, 1967, abandoned. This application Nov. 18, 1970, Ser. No. 90,774
Claims priority, application Hungary, May 24, 1966, 879
Int. Cl. B03c *5/00*; C02b *1/78*
U.S. Cl. 204—302 **2 Claims**

An apparatus for the treatment of fluid solutions with an electric field has a vessel for containing the fluids to be treated, the walls of said vessel being made of dielectric material, at least one system of electrodes inside the vessel and at least one system of counter-electrodes outside the vessel for



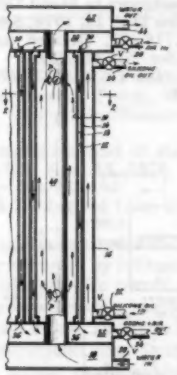
producing electric fields of parallel lines of force and variable strength, to which electric field the fluids are exposed for treatment and purification.

3,766,051

LIQUID COOLED OZONE GENERATOR

Joseph Bollyky, Stamford, Conn., assignor to Pollution Control Industries, Inc., Stamford, Conn.

Filed Sept. 22, 1971, Ser. No. 182,681
Int. Cl. C01b *13/10*, *13/12*
U.S. Cl. 204—321 **4 Claims**



An ozone generator module of the electirc discharge field type is provided having at least one cell comprising an assembly of three concentric tubular members, the inner and outer tubular members being electrodes separated by a tubular dielectric member spaced from one of the electrodes a distance sufficient to define a high density electric discharge zone between them, the cell or cells being disposed within a liquid container. Substantially optimum conditions for the production of ozone are provided by making the cross sectional dimension of the field uniform throughout to within a very small range of tolerance and by controlling the temperature of the electrodes by cooling them with liquid coolants one of which is a dielectric liquid, and limiting the density of the field by regulating the voltage across the field and the frequency employed.

3,766,052

PROCESS FOR THE PURIFICATION OF COAL TAR

Michael Joseph Bordovsky, and William Henry Weller, both of San Antonio, Tex., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 22, 1972, Ser. No. 236,954
Int. Cl. C10c 3/00
U.S. Cl. 208—45 6 Claims

A process is disclosed for the purification of coal tar. This process comprises treating commercially available coal tar with a fatty acid ester, extracting the fatty acid ester treated coal tar with a higher molecular weight hydrocarbon such as squalane and recovering the hydrocarbon-extracted product. The coal tar thus treated is dermatologically more acceptable and clinically more effective than known coal tar extracts or preparations and can be incorporated into many dermatologically acceptable vehicles.

3,766,053

CORROSION INHIBITORS FOR REFINING & PETROCHEMICAL PROCESSING EQUIPMENT

William E. Seffens, Houston, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

Filed June 29, 1972, Ser. No. 267,333
Int. Cl. C23f 11/10; C07d 49/34; C10g 9/16
U.S. Cl. 208—47 4 Claims

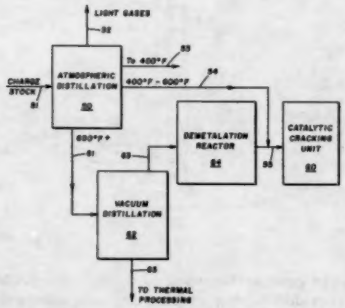
A process for the prevention of corrosion in refinery systems by the injection of an imidazoline compound into the overhead vapor line. The imidazoline compound is formed from the reaction of a naphthenic acid and dipropylene triamine.

3,766,054

DEMETALATION OF HYDROCARBON CHARGE STOCKS

Paul B. Weisz, Yardley, and Anthony J. Silvestri, Morrisville, Pa., assignors to Mobil Oil Corporation

Original application Dec. 23, 1970, Ser. No. 100,931, now Patent No. 3,716,479. Divided and this application May 12, 1972, Ser. No. 252,935
Int. Cl. C10g 23/00
U.S. Cl. 208—89 1 Claim



This specification discloses the demetalation of a hydrocarbon charge stock. The demetalation procedure involves contacting the hydrocarbon charge stock with hydrogen in the presence of, as a catalyst, a material derived from the naturally occurring underwater deposit known as a manganese nodule. The manganese nodule may be employed without pretreatment or may be pretreated by sulfiding or by leaching to remove and recover one or more valuable metallic constituents. The manganese nodule catalyst, after it has become deactivated by use, may be processed to remove and recover one or more valuable metallic constituents.

3,766,055

LUBRICATING OILS BY HYDROCRACKING AND SOLVENT EXTRACTION

Billy H. Cummins and William B. Ashton, Nederland, and James A. Brasher and John D. Askew, Jr., Groves, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 827,064, May 22, 1969. This application July 19, 1971, Ser. No. 164,028
Int. Cl. C10g 37/04
U.S. Cl. 208—92 9 Claims

Lubricating oils of high viscosity index are prepared by hydrocracking an asphalt-containing vacuum residuum, recovering a lube oil fraction from the product and solvent refining the recovered lube oil fraction.

3,766,056

HYDROCARBON CONVERSION METHOD

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Application Mar. 9, 1970, Ser. No. 17,974, now Patent No. 3,706,694, which is a continuation-in-part of abandoned application Ser. No. 761,321, Sept. 20, 1968, which in turn is a continuation-in-part of abandoned application Ser. No. 681,561, Nov. 8, 1967. Divided and this application July 17, 1972, Ser. No. 272,479
Int. Cl. C10g 13/02; C01b 33/28
U.S. Cl. 208—111 6 Claims

A method for preparing crystalline aluminosilicate zeolite catalysts having a low alkali metal content in the zeolite and containing (1) a polyvalent metal cation, preferably an iron group metal and (2) a hydrogenation component, comprises pre-calcining or pre-steaming the polyvalent metal containing zeolite prior to addition of the hydrogenation component. The invention also includes the subsequent introduction of additional stabilizing element following the pre-calcining or pre-steaming but prior to addition of the hydrogenation component. The catalysts find particular utility in hydrocracking and hydrotreating processes.

3,766,057

PROCESS FOR THE CATALYTIC HYDROGENATION OF DISTILLATION RESIDUUM-CONTAINING HYDROCARBONS AND THE CATALYST COMPOSITION THEREFOR

Yutaka Oguchi, Tokyo, and Hirotsugu Nomura, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,360
Claims priority, application Japan, Dec. 7, 1970, 45/107,635
Int. Cl. C10g 23/02
U.S. Cl. 208—143 6 Claims

A process for the catalytic hydrogenation of distillation residuum-containing petroleum hydrocarbons which comprises contacting the hydrocarbons with a hydrogenatively active metal catalyst supported on alumina or alumina-silica gels in the presence of hydrogen, wherein

(a) the gel is a gelled product obtained by heating a sol solution selected from the group consisting of a hydrosol of basic aluminum sulfate and a mixture of such hydrosol with a hydrosol of silica,

(b) the gelled product has a surface area of 250–450 square meters per gram, a pore volume of 0.5–1.5 cubic centimeters per gram, and a mean pore radius of 40–100 angstroms, and

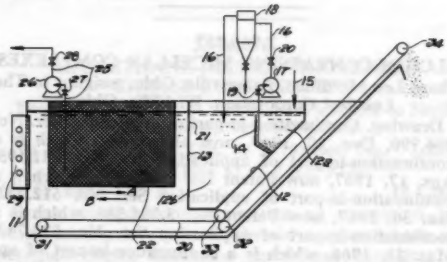
(c) in a certain 10 angstrom width within the mean pore radius range, there is a peak which accounts for greater than 15% of the pore volume.

3,766,058
PROCESS FOR HYDROPROCESSING HEAVY HYDROCARBON FEEDSTOCKS
Albert L. Hensley, Jr., Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.
Filed Nov. 1, 1971, Ser. No. 194,703
Int. Cl. C10g *31/14*
U.S. Cl. 208—210 25 Claims

The process comprises contacting the feedstock in a first reaction zone with a first catalyst in the presence of hydrogen and under hydroprocessing conditions to produce a first effluent and contacting said first effluent in a second reaction zone with a second catalyst in the presence of hydrogen and under hydroprocessing conditions. The first catalyst comprises a member selected from the group consisting of a metal of Group VI–A and a metal of Group VIII, oxides of said metals, sulfides of said metals, and mixtures thereof on a solid catalytic support comprising an oxide of zinc oxide and catalytically active alumina and has an average pore diameter of about 50 A. to about 100 A. The second catalyst comprises a hydrogenation component and a solid non-acidic or weakly-acidic support and has an average pore diameter that is greater than the average pore diameter of the first catalyst.

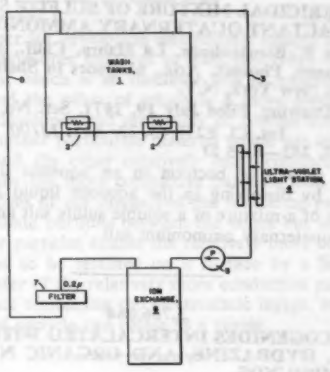
Feedstocks may be selected from the group consisting of petroleum hydrocarbon residua, shale oil, liquified coal, oil from tar sands, and combinations thereof.

3,766,059
FILTERING METHOD AND A FILTERING MACHINE THEREFOR
Jiro Sasaki, Nara, Japan, assignor to Toshin Science Co., Ltd., Osaka, Japan
Filed Aug. 27, 1971, Ser. No. 175,494
Claims priority, application Japan, Dec. 28, 1970, 46/127,159; May 29, 1971, 46/44,645
Int. Cl. B01d *35/20*
U.S. Cl. 210—19 4 Claims



A filtering method wherein sonic or ultrasonic oscillation is given to liquid to be filtered and flowing into the direction normal to the surface of the filter medium in such a manner that said liquid is oscillated along a direction parallel to the surface of said medium, whereby the liquid together with impurity particles therein is caused to move with a predetermined angle smaller than 90 degree with respect to the surface of the filter medium so that impurity particles having diameters much smaller than the internal diameter of the pores penetrating the medium never enter said pores. Thus, impurity particles much smaller than said pores can be removed, resulting in no need of backwashing of the filter medium for a long period of time. The present invention is further concerned with a filtering machine for performing said method.

3,766,060
RINSE WATER PURIFICATION
Verity C. Smith, Dedham, Mass., assignor to Vaponics Incorporated, Plymouth, Mass.
Continuation of application Ser. No. 57,434, July 23, 1970. This application July 12, 1972, Ser. No. 270,994
Int. Cl. C02b *3/04*
U.S. Cl. 210—64 5 Claims



The use of a 0.2-micron filter is made possible in a recirculating wash or rinse system by maintaining the system under biologically sterile conditions. Sterile conditions are best maintained by either exposing the liquid to ultraviolet light or by keeping the system at a constant high temperature.

3,766,061
DECORATIVE IRIDESCENT COMPOSITIONS
Walter Mahler and Manuel Panar, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of abandoned application Ser. No. 34,920, Apr. 13, 1970. This application Sept. 20, 1971, Ser. No. 182,194
Int. Cl. A61k *7/02*; B44d *5/06*; C09k *1/02*
U.S. Cl. 252—1 32 Claims

Solid compositions having cholesteric properties, particularly iridescence are made by intimately mixing esters of cholesterol or cholesterol-like sterols, by melt or solution methods. The esters include a substantial proportion of hydrogen phthalate esters. The remaining esters preferably contain a carbocyclic ring. Sterols or sterol 3β-halides can also be present in the mixture. If cinnamate esters are employed all or part of the hydrogen phthalate esters can be replaced with hydrogen isophthalate esters. The compositions are useful for decorative coatings.

3,766,062
1,2-ALKANEDIOL CONTAINING FABRIC SOFTENING COMPOSITIONS
Harold Eugene Wixon, New Brunswick, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.
No Drawing. Continuation of abandoned application Ser. No. 839,697, July 7, 1969. This application Aug. 3, 1971, Ser. No. 168,762
Int. Cl. D06m *13/32*
U.S. Cl. 252—8.7 3 Claims

A fabric softening detergent composition comprising a higher 1,2-alkanediol and conventional detergent additives

such as alkyl benzene sulfonates, hydrotropes, brighteners, builders, germicides, suspending agents, antioxidants, bleaches, coloring additives and perfumes. In addition the instant fabric softening composition may comprise the synergistic combination of a higher 1,2-alkanediol with a linear alkyl benzene sulfonate and a higher alkylol sulfate which combination unexpectedly results in superior fabric softening.

3,766,063

BACTERICIDAL MIXTURE OF SULFITE SALT AND SURFACTANT QUATERNARY AMMONIUM SALT

Charles F. Blankenhorn, La Habra, Calif., and Ted S. Felmann, Phoenix, Ariz., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed July 19, 1971, Ser. No. 164,049

Int. Cl. E21b *43/22;* **A61l** *13/00*

U.S. Cl. 252—8.55 D **2 Claims**

The growth of bacteria in an aqueous liquid is inhibited by dissolving in the aqueous liquid an effective amount of a mixture of a soluble sulfite salt and a surface active quaternary ammonium salt.

3,766,064

CHALCOGENIDES INTERCALATED WITH AMMONIA, HYDRAZINE, AND ORGANIC NITROGEN COMPOUNDS

Fred R. Gamble, Los Altos, Calif., Richard A. Klemm, Somerville, Mass., and Edwin F. Ullman, Atherton, Calif., assignors to Synvar Associates, Palo Alto, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 884,319, Dec. 11, 1969. This application Nov. 25, 1970, Ser. No. 92,912

Int. Cl. C10m *7/34, 7/32, 7/30*

U.S. Cl. 252—25 **19 Claims**

Novel compositions of matter formed of ammonia, hydrazine, and organic nitrogen compound intercalates and heavy metal layered chalcogenides, wherein the chalcogen is selected from sulfur, selenium and/or tellurium. The novel intercalated compounds display advantageous characteristics when utilized as solid lubricants, and as diffraction grating crystals. Certain of the intercalated transition metal chalcogenides also exhibit unique superconductivity characteristics.

3,766,065

FLAME RETARDANT DISPERSIONS

Dong M. Chay and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,831

Int. Cl. B27k *3/00;* **C09d** *5/18;* **C09k** *3/00*

U.S. Cl. 252—8.1 **10 Claims**

Stable dispersions of 3 to 35 percent by weight of colloidal antimony^{+3}-titanium^{+4} oxide, the colloidal particles having an average diameter in the range of 2 to 50 millimicrons, in polar organic solvents containing monovalent anions. The mole ratio of antimony to titanium is in the range of about 1.3:1 to 1:3 and the mole ratio of monovalent anion to metal cations is in the range of 0.5:1 to 1.7:1.

The metal oxide sols are prepared in organic solvents by reacting gaseous ammonia with solutions of antimony trichloride and titanium tetrachloride in dimethylformamide, the oxygen source being a stoichiometric amount of water. The precipitated ammonium chloride is removed by filtration. The colloidal oxides can be transferred from DMF into other polar organic solvents to give stable dispersions.

3,766,066

GROUPS I AND II METAL-CONTAINING MICELLAR COMPLEXES

Richard Leo McMillen, Painesville, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 5,427, Jan. 23, 1970, now abandoned, which is a continuation-in-part of application Ser. No. 631,195, Apr. 17, 1967, now Patent No. 3,492,231, which is a continuation-in-part of application Ser. No. 612,332, Jan. 30, 1967, now Patent No. 3,384,586, which is a continuation-in-part of application Ser. No. 535,742, Mar. 21, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 185,521, Apr. 6, 1962, now Patent No. 3,242,079. Said application Ser. No. 631,195 being a continuation-in-part of application Ser. No. 580,575, Sept. 20, 1966, now Patent No. 3,376,222, which is a continuation-in-part of applications Ser. No. 323,135, Nov. 12, 1963, now abandoned, and Ser. No. 558,287, June 17, 1966, now Patent No. 3,350,308, both being continuations-in-part of application Ser. No. 309,293, Sept. 16, 1963, now abandoned. Said application Ser. No. 612,332 being a continuation-in-part of applications Ser. No. 369,271, May 21, 1964, and Ser. No. 535,048, Mar. 17, 1966, both now abandoned. Finally, said application Ser. No. 631,195 is also a continuation-in-part of application Ser. No. 535,693, Mar. 21, 1966, now Patent No. 3,372,115, which in turn is a continuation-in-part of said application Ser. No. 185,521. This application Oct. 12, 1971, Ser. No. 188,507

Int. Cl. C-0m *5/16, 5/22, 7/36*

U.S. Cl. 252—32.7 E **11 Claims**

Solid, Groups I and II metal-containing micellar complexes are prepared by isolating the solid, metal-containing matter from homogenized, overbased organic acids with the aid of such conversion agents as aliphatic carboxylic acids, water, alcohols, phenols, ketones, aldehydes, amines, boron acids, phosphorus acids, oxygen, air, carbon dioxide, and mixtures thereof. The metal-containing compositions are readily and stably dispersed in nonpolar organic liquids. They are useful as additives in plastics, rubbers, paints, caulks, etc., where they function as fillers and thixotropic agents.

3,766,067

CALCIUM-CONTAINING MICELLAR COMPLEXES

Richard Leo McMillen, Painesville, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Continuation-in-part of application Ser. No. 886,790, Dec. 19, 1969, now abandoned, which is a continuation-in-part of application Ser. No. 631,195, Apr. 17, 1967, now Patent No. 3,492,231, which is a continuation-in-part of application Ser. No. 612,332, Jan. 30, 1967, now Patent No. 3,384,586, which is a continuation-in-part of application Ser. No. 535,742, Mar. 21, 1966, which is a continuation-in-part of application Ser. No. 185,521, Apr. 6, 1962, now Patent No. 3,242,079. Said application Ser. No. 631,195 being a continuation-in-part of application Ser. No. 580,575, Sept. 20, 1966, now Patent No. 3,376,222, which is a continuation-in-part of applications Ser. No. 323,135, Nov. 12, 1963, now abandoned, and Ser. No. 558,287, June 17, 1966, now Patent No. 3,350,308, both being continuations-in-part of application Ser. No. 309,293, Sept. 16, 1963, now abandoned. Said application Ser. No. 612,332 being a continuation-in-part of applications Ser. No. 369,271, May 21, 1964, and Ser. No. 535,048, Mar. 17, 1966, both now abandoned. Finally, application Ser. No. 631,195 is also a continuation-in-part of application Ser. No. 535,693, Mar. 21, 1966, now Patent No. 3,372,115, which in turn is a continuation-in-part of said application Ser. No. 185,521. This application Sept. 9, 1971, Ser. No. 179,160

Int. Cl. C10m *5/22, 5/16, 7/36*

U.S. Cl. 252—33 **14 Claims**

Calcium-containing micellar complexes are prepared by isolating the solid, calcium-containing matter from ho-

mogenized, carbonated, calcium-overbased organic acid salts with the air of such conversion agents as water and alcohols. These micellar complexes are characterized by a high calcium carbonate content and are readily and stably dispersed in nonpolar organic liquids. They are useful as additives in plastics, rubbers, paints, caulks, etc., where they function as fillers and thixotropic agents, and in the preparation of greases from natural and synthetic base stocks.

3,766,068

AQUEOUS LUBRICATING COMPOSITIONS

Thomas C. Tesdahl, Forest Park, Douglas L. Holcer, Fairfield, and Homer E. Crotty, Cincinnati, Ohio, assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,530

Int. Cl. C10m *3/34, 3/30*

U.S. Cl. 252—33.2 **8 Claims**

An aqueous lubricating composition consisting essentially of an aqueous carrier containing from about 5 to about 40 percent by weight of a blend of

(a) an N-acylsarcosinate surfactant and
(b) an N-acyl-N-alkyltaurate surfactant

wherein the weight ratio of (a) to (b) is in the range of from about 0.25 to about 4.0.

3,766,069

EXTREME PRESSURE LUBRICATING OIL ADDITIVES

Bruce W. Hotten, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed July 26, 1971, Ser. No. 164,870

Int. Cl. C10m *1/38*

U.S. Cl. 252—48.6 **5 Claims**

Lubricating oil additives comprising a class of sulfurized hydroxyesters are provided, which have the properties of extreme pressure lubrication, stability and noncorrosivity towards copper. The hydroxyesters are the product of the reaction of an epoxide with a fatty acid or a derosinified tall oil.

3,766,070

DIURETHANE-DIUREA-THICKENED GREASE COMPOSITIONS

Thomas F. Wulfers, St. Louis, Mo., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,383

Int. Cl. C10m *5/20, 7/30, 7/34*

U.S. Cl. 252—51.5 A **10 Claims**

Grease compositions comprising an oleaginous base vehicle having incorporated therein a minor about of a diurethane-diurea thickening agent have excellent high temperature dynamic lubricating properties. The diurethane-diurea thickeners are produced from monohydric alcohols, diisocyanates and diamines.

3,766,071

DIURETHANE-DIUREA-THICKENED GREASE COMPOSITIONS

Thomas F. Wulfers, St. Louis, Mo., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,384

Int. Cl. C10m *5/20, 7/30, 7/34*

U.S. Cl. 252—51.5 A **11 Claims**

Grease compositions comprising an oleaginous base vehicle having incorporated therein a minor amount of a diurethane-diurea thickening agent have excellent high temperature dynamic lubricating properties. The diurethane-diurea thickeners are produced from dihydric alcohols, diisocyanates and monoamines.

3,766,072

EDGE AND LATITUDE DEVELOPER

Kenneth A. Metcalfe and Ian E. Smith, Lockleys, South Australia, Australia, assignors to The Commonwealth of Australia, Parkes, Canberra, Australian Capital Territory, Australia

Continuation of abandoned application Ser. No. 889,138, Dec. 20, 1969. This application Dec. 20, 1971, Ser. No. 209,858

Claims priority, application Australia, Dec. 30, 1968, 48,482/68

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **6 Claims**

A developer for developing electrostatic images on surfaces. The developer contains at least two types of particles, one of which is an insulator and is preferably of finer size and the other of which is a more conductive particulate developer and preferably of coarser size with possibly a further particulate material which has one end insulating and the other relatively more conductive or polar whereby the more conductive particles tend to develop the edges of the image and the insulating particles the intermediate portions between the edges but wherein the insulator particles enable the relatively more conductive particles to be retained on a surface by a limiting charge transfer of the relatively more conductive particles to the surface containing the electrostatic image, and the third type of particle can rotate as a stirrer.

3,766,073

FERROELECTRIC AND PIEZOELECTRIC COMPOSITION

Mitsuo Osada and Osamu Kumon, Osaka, and Tatsuya Nishimoto, Nishinomiya, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of abandoned application Ser. No. 795,001, Jan. 29, 1969. This application Aug. 6, 1971, Ser. No. 169,709

Claims priority, application Japan, Jan. 29, 1968, 43/5,589; Feb. 20, 1968, 43/10,973; Apr. 29, 1968, 43/12,676

The portion of the term of the patent subsequent to Dec. 28, 1988, has been disclaimed

Int. Cl. C04b *35/46, 35/48*

U.S. Cl. 252—62.9 **4 Claims**

A ferroelectric and piezoelectric composition consisting essentially of a solid solution of the ternary system consisting of $Pb(In_{1/2}Nb_{1/2})O_3$-$PbZr_{(1-u)}Sn_uO_3$-$PbTiO_3$ wherein $O<u\leqq 1$ and wherein the amounts X, Y and Z of said $Pb(In_{1/2}Nb_{1/2})O_3$, $PbZr_{(1-u)}Sn_uO_3$ and $PbTiO_3$, respectively, in mole percent, with the total being 100 mole percent, vary within the figure ABCDEFGH shown in FIG. 1, is disclosed. The composition exhibits improved ferroelectric and piezoelectric properties in comparison to prior art compositions.

3,766,074

MAGNETICALLY PIGMENTED PAINT

Carl V. Brouillette, Oxnard, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 15, 1972, Ser. No. 289,529

Int. Cl. H01f *1/113*

U.S. Cl. 252—62.54 **4 Claims**

A magnetic paint formulation that may be applied to metal surfaces especially such surfaces when immersed in a body of fluid. The magnetic ingredient of the composition is a magnetic iron oxide and when attracted to a magnetized metal material, the paint is intimately drawn onto the surface thereof. The paint comparatively contains little solvent for underwater use.

3,766,075

DRYCLEANING COMPOSITIONS

Herman Roy Jackson, 1981 San Marco Blvd., Jacksonville, Fla. 32207

No Drawing. Filed July 30, 1971, Ser. No. 167,863
Int. Cl. C11d 7/54; D06l 3/00
U.S. Cl. 252—104 12 Claims

Residual moisture and sulfur and other residual reducing agent impurities contained in drycleaning solvents are removed by adding to the solvents an unsubstituted aromatic hydrocarbon or a halogen or alkyl substituted aromatic hydrocarbon and dried cellulosic material on which has been precipitated a fine deposit of lead dichromate. The same materials may also be added to petroleum products in order to remove sulfur impurities therefrom.

3,766,076

STRIPPING COMPOSITION AND PROCESS

Donald P. Murphy, Royal Oak, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 788,010, Dec. 30, 1968. This application Nov. 5, 1970, Ser. No. 87,321
Int. Cl. C11d 7/06
U.S. Cl. 252—156 8 Claims

An aqueous alkaline stripping solution which contains an accelerator composition comprised of ethylene glycol monophenyl ether and an organic nitrogen compound selected from phenyl diethanol amine; 2,2'-[m-tolylimino]diethanol; benzyl diethanol amine; benzyl ethanol amine, bis(hydroxypropyl) aniline; aniline; cyclohexylamine; 2 - naphthylamine - 1 - sulfonic acid; p-aminophenol; o-phenylenediamine; m-phenylenediamine; m-chlorophenyl diethanolamine; m-toluidene-o-sulfonic acid; cyclohexyldiethanolamine; phenylethanolamine; and tolylethanolamine. The preferred alkaline stripping solution is an aqueous sodium hydroxide solution and the preferred components of the activator composition are ethylene glycol monophenyl ether and phenyl diethanol amine.

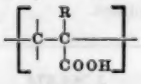
3,766,077

COMPOSITIONS AND METHOD FOR INHIBITING SCALING IN AQUEOUS SYSTEMS

Chih M. Hwa, Arlington Heights, Ill., and Ralph T. Moran, Sarasota, Fla., assignors to Chemed Corporation, Cincinnati, Ohio

No Drawing. Continuation of abandoned application Ser. No. 105,660, Jan. 11, 1971. This application Aug. 16, 1972, Ser. No. 281,266
Int. Cl. C02b 5/06
U.S. Cl. 252—180 1 Claim

Mixtures of lignosulfonic acid or water-soluble lignosulfonates and water-soluble organic polymers consisting of repeated groups with the formula:



wherein R is hydrogen or a methyl group, or water-soluble salts or esters of such polymers inhibit the formation of alkaline earth salt scales in aqueous systems.

3,766,078

PROCESSES FOR STABILIZING PEROXY SOLUTIONS

Xavier Kowalski, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 3, 1971, Ser. No. 149,854
Int. Cl. C01b 15/00
U.S. Cl. 252—186 6 Claims

Alkaline aqueous solutions containing a peroxy compound and an alkali metal silicate are stabilized against substantial decomposition of said peroxy compound by the inclusion of a stabilizing agent which is, for example, a combination of nitrilotriacetic acid, 1-hydroxy ethylidene-1, 1-diphosphonic acid, and a magnesium or calcium salt, e.g., magnesium sulfate, and which stabilizing agent effects (1) reducing the decomposition of said peroxy compound and (2) preventing silicate deposition.

3,766,079

EXOTHERMIC COMPOSITION

Robert M. Jackman, Little Rock, and Junior L. Johnson, Mabelvale, Ark., assignors to A. O. Smith-Inland, Inc., Milwaukee, Wis.

No Drawing. Filed Oct. 13, 1970, Ser. No. 80,475
Int. Cl. B65b 29/10; B65d 29/06
U.S. Cl. 252—188.3 R 7 Claims

An exothermic composition capable of generating heat on the addition of water and having particular use for curing the thermosetting resin adhesive joint in pipe sections. The exothermic composition consists of a strong base, an acid component, finely divided inert material and water. The water is pre-mixed with the inert material, being adsorbed on the particles of the inert material, and when the components are blended together a more uniform generation of heat is produced which prevents localized areas of overheating. To increase the generation of heat, finely divided metal powder can be incorporated in the composition and the metal powder will react with the base to provide a second stage of heat generation. To provide a more uniform application of heat to the adhesive joint a multiplicity of small, hollow, thermoplastic microspheres can be incorporated in the composition.

3,766,080

CRYSTALLINE MATERIALS

Carl F. Swinehart, University Heights, and Marko Sfiligoj, South Euclid, Ohio, assignors to Kewanee Oil Company, Bryn Mawr, Pa.

Continuation-in-part of abandoned application Ser. No. 314,952, Oct. 9, 1963. This application Oct. 27, 1971, Ser. No. 193,206
Int. Cl. G02b 5/20
U.S. Cl. 252—300 6 Claims

A composition of matter transparent to infrared rays and shock resistant which is a directionally grown, polycrystalline solidified melt of a eutectic composition comprising at least two components wherein the ratio of the index of refraction of one to the other is within the range of 1.2 to 1.0, the directionally oriented, polycrystalline mass is grown in a controlled manner by adding heat to the melt and removing the same from the solids during the solidification step, the amount of heat being added to the melt and conducted through the solidified melt being 10^3 to 10^5 times the latent heat of fusion of the eutectic mixture.

3,766,081

LIGHT-MODULATING MEDIUM FOR IMAGE PROJECTION APPARATUS

David A. Orser, Liverpool, N.Y., assignor to General Electric Company

No Drawing. Filed May 18, 1972, Ser. No. 254,696
Int. Cl. F21v 9/00; H04n 3/16, 5/44
U.S. Cl. 252—300 2 Claims

Addition of small amounts of tris(3-phenylpropyl) phosphate to a light-modulating fluid increases the critical quieting thickness of the fluid thereby permitting a brighter image to be projected by the projection apparatus in which the modified fluid is used as the light-modulating medium.

3,766,082

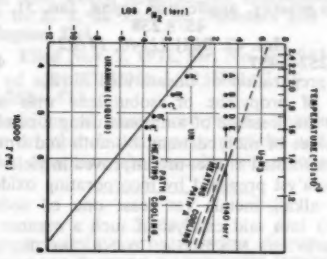
SINTERING OF COMPACTS OF UN, (U, Pu)N, AND PuN

Victor J. Tennery and Thomas G. Godfrey, Oak Ridge, and Edward S. Bomar, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Apr. 20, 1971, Ser. No. 135,730

Int. Cl. G21c *21/00*; C01g *43/00*

U.S. Cl. 252—301.1 R 3 Claims



A method is provided for preparing a densified compact of a metal nitride selected from the group consisting of UN, (U, Pu)N, and PuN which comprises heating a green compact of at least one said selected nitride in the mononitride single-phase region, as displayed by a phase diagram of the mononitride of said compact, in a nitrogen atmosphere at a pressure of nitrogen less than 760 torr, which produces, at a given temperaure, a single-phase structure and a maximal sintered density as measured by mercury displacement.

3,766,083

FLUORESCENT WHITENING COMPOSITIONS

Theodore A. Langstroth, Cincinnati, and Arthur S. Neave, Jr., Indian Hill, Ohio, assignors to Sterling Drug Inc., New York, N.Y.

No Drawing. Filed Apr. 12, 1971, Ser. No. 133,341

Int. Cl. D06b *3/12*

U.S. Cl. 252—301.2 W 3 Claims

Aqueous compositions of tetra-alkali metal salts of 4,4'-bis(4 - p-sulfoanilino-6-diisopropanolamino-s-triazin-2-yl-amino)-2,2'-stilbenedisulfonic acid which are stable and have excellent pot life when used for whitening cellulose fibers concomitantly with their treatment with conventional thermosetting textile resins.

3,766,084

METHOD OF PREPARING AN ULTRAVIOLET-EMITTING PHOSPHOR

Edward C. Malarkey, Severna Park, Michael R. Natale, Baltimore, and Jon W. Ogland, Glen Burnie, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 16, 1971, Ser. No. 172,073

Int. Cl. C09k *1/54*

U.S. Cl. 252—301.6 F 3 Claims

An ultraviolet-emitting cathodoluminescent phosphor comprising $Sr_3ZnSi_3O_7$:Pb (0.6% to 1.0% molar) wherein Pb substitutes in part for Sr and Zn is prepared, by heating in powder form a mixture of silicon dioxide, strontium carbonate, strontium fluoride, zinc oxide and lead oxide in an atmosphere of flowing air and steam at a temperature in the range of about 1275° C. to 1325° C. The resulting material, in which lead acts as an activator, gives radiant ultraviolet outputs approaching 1 kilowatt/cm.² at 2.5% efficiency under extremely high current density excitation in very high resolution cathode-ray tubes.

3,766,085

USE OF N-ACYLAMINO ACIDS, THEIR SALTS AND ESTERS AS EMULSIFYING AGENTS, AND EMULSION SYSTEMS PREPARED THEREFROM

Rudolf Fahnenstich, Mombris, Joachim Heese, Grossauheim, and Gregor Schuster, New-Ulm, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

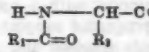
No Drawing. Filed Mar. 7, 1972, Ser. No. 232,627

Claims priority, application Germany, Mar. 10, 1971, P 21 11 361.1

Int. Cl. B01j *13/00*

U.S. Cl. 252—309 19 Claims

The use of an N-acylamino acid or ester or salt thereof as an emulsifier in the production of an oil-in-water or water-in-oil emulsion, which comprises mixing with an oil-in-water or water-in-oil composition a compound of the formula



in which R_1 is a radical of a naturally occurring saturated or unsaturated fatty acid having about 2–22 carbon atoms, R_2 is a radical of a naturally occurring or chemically modified amino acid, and R_3 is hydrogen, a radical of a monohydroxy alcohol having about 1–4 carbon atoms, a radical of a polyhydric alcohol or a radical of a higher sugar alcohol. Water-in-oil and oil-in-water emulsion systems are also provided. The N-acylamino acids, esters and salts are particularly useful for preparing food stuffs and animal feeds.

3,766,086

POLYISOCYANURATE-BIURET SURFACTANTS

Perry A. Argabright, Sedalia, Charles B. Wenger, Denver, and C. Travis Presley, Littleton, Colo., assignors to Marathron Oil Company, Findlay, Ohio

Filed June 28, 1971, Ser. No. 157,236

Int. Cl. C08g *22/00*

U.S. Cl. 252—312 7 Claims

A mixture of molecules containing all of the following groups show emulsifying ability: isocyanurate, metal isocyanurate and biuret.

3,766,087

PROCESS FOR TREATING POLLUTED WATER WITH LOW TEMPERATURE BRINE SOLUTION

Jacob Greenberg, Ventnor City, N.J., assignor to Anti-Pollution Systems, Inc., Pleasantville, N.J.

Filed June 27, 1972, Ser. No. 266,584

Int. Cl. B01d *17/00*

U.S. Cl. 252—348 7 Claims

A process for treating polluted water, and particularly water comprising an emulsion of acrylic residues, wherein the polluted water is fed onto the surface of a brine solution maintained at the boiling point, the emulsion being broken instantly at the surface of the brine and accumulated as an organic residue, while the water is boiled off. The organic residue is skimmed off for separate handling.

3,766,088

PROCESS FOR THE REGENERATION OF CATALYST FOR HYDRATION OF NITRILE COMPOUNDS

Kiyotaka Yoshimura, Fujisawa, Shiro Asano and Tadatoshi Honda, Yokohama, and Ryoji Tsuchiya, Kamakura, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

No Drawing. Filed Dec. 14, 1971, Ser. No. 207,998
Claims priority, application Japan, Dec. 24, 1970, 45/116,694
Int. Cl. B01j *11/30, 11/02*
U.S. Cl. 252—412 5 Claims

A process for regenerating a metallic copper catalyst used in producing corresponding amide compounds from nitrile compounds by hydrating their nitrile radical, comprising treating the catalyst with an aqueous solution of a compound selected from the group consisting of sodium compounds, potassium compounds, calcium compounds and ammonium compounds.

3,766,089

RUTHENIUM CATALYST

Raul S. De Pablo, Painesville, and Howard N. Benedict, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Filed May 15, 1972, Ser. No. 253,471
Int. Cl. B01j *11/78*
U.S. Cl. 252—412 9 Claims

An improved ruthenium catalyst is prepared by impregnating a catalyst support with a ruthenium chloride solution, drying the impregnated support by volatilization of the ruthenium chloride solution and then partially reducing the dried ruthenium chloride coating on the support. The catalyst is useful in the hydrogenation of the pyrroles. Spent catalyst can be rejuvenated by recoating with ruthenium chloride solution, drying the coated spent catalyst and then partially reducing the ruthenium chloride coating.

3,766,090

PROCESS FOR REGENERATING ACTIVE CARBON LOADED WITH SULFURIC ACID

Harald Juntgen, Essen-Heisingen, and Karl Knoblauch, Essen, Germany, assignors to Bergwerksverband GmbH, Essen, Germany

No Drawing. Filed July 19, 1971, Ser. No. 162,970
Claims priority, application Germany, July 17, 1970, P 20 35 466.9
Int. Cl. B01j *11/02;* B01d *15/06*
U.S. Cl. 252—413 5 Claims

Process for regenerating active carbon loaded with sulfuric acid following its use as an adsorbent for SO_2 from exhaust gases which comprises in a first step washing out the major amount of adsorbed sulfuric acid with dilute sulfuric acid and/or water and in a second step washing out the remaining sulfuric acid using water and gaseous ammonia or ammonia water as washing agent.

3,766,091

MODIFIED ORGANOMAGNESIUM CATALYST COMPOSITIONS

Edwin J. Vandenberg, Foulk Woods, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 5,149, Jan. 22, 1970, which is a continuation-in-part of application Ser. No. 694,374, Dec. 29, 1967, both now abandoned, which in turn is a continuation-in-part of application Ser. No. 18,888, Mar. 31, 1960, now Patent No. 3,415,761. This application Oct. 19, 1971, Ser. No. 190,688
Int. Cl. C07f *3/02;* C08g *23/14*
U.S. Cl. 252—431 R 8 Claims

Certain modified organomagnesium compounds have been discovered, which are particularly useful as polymerization catalysts. These new catalyst compositions comprise the reaction product of an organomagnesium compound such as a dialkylmagnesium with water, a polyol or a polyhydric phenol admixed with an inert organic diluent and/or a complexing agent for the modified organomagnesium compound.

3,766,092

CATALYST FOR PREPARATION OF UNSATURATED NITRILES

Makoto Honda, Tokyo, Tetsuro Dozono, Kanagawa, Keizo Hirakawa and Kunihisa Aoki, Tokyo, and Nobuo Sugita, Kanagawa, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,575
Claims priority, application Japan, Jan. 31, 1970, 45/8,238
Int. Cl. B01j *11/40, 11/82*
U.S. Cl. 252—437 4 Claims

In the preparation of unsaturated nitriles by catalytic oxidation of propylene or isobutylene with molecular oxygen in the presence of ammonia using a catalyst comprising oxides of molybdenum, bismuth and iron, the resulting unsaturated nitriles are improved in yield by use of a novel cata'yst prepared by incorporating oxides of cobalt and alkali metals (at least one of sodium and potassium) into said catalyst in such a manner that the atomic ratio of Mo/Bi/Fe/Co/Na (or K) may be 12/1–11/1–9/1–6/0.5–2, wherein the sum of atoms of Bi and Co is controlled within 6–12, preferably 12/3.5–7/2–9/2–5/1/1. The catalyst is useful as an industrial catalyst having a high catalyst activity as well as long life, which is particularly suitable for use in a fluidized-bed reactor for the preparation of unsaturated nitriles from propylene and isobutylene.

3,766,093

TREATMENT OF ORGANIC CATION-CONTAINING ZEOLITES

Pochen Chu, Woodbury, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Jan. 7, 1972, Ser. No. 216,288
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 24 Claims

A method of removing the organic cation from an organic cation-containing zeolite which comprises contacting the said zeolite with a solution of a compound which has a standard oxidation potential of at least 0.25 volt.

3,766,094

SEMICONDUCTOR COMPOSITIONS

Michael Ognyanov, 327 Alpine St., Pasadena, Calif. 91106

Continuation-in-part of abandoned application Ser. No. 77,452, Oct. 2, 1970. This application Sept. 20, 1971, Ser. No. 181,944
Int. Cl. H01b *1/00*
U.S. Cl. 252—512 7 Claims

A resonance oscillator electric power pack for operating a flash lamp, for example, or other electrically operated device, operates without moving mechanical parts or electrolytic action. The power pack is contained in a cylindrical metal envelope and in a preferred embodiment is coupled to a relaxation oscillator and an incandescent lamp. Within the envelope, and insulated therefrom, is a semiconductor tablet having a metal base connected to the external circuit. A metal probe makes contact with a point on the semiconductor tablet and also with a cylindrical ferrite rod axially aligned with the envelope. Wound about the ferrite rod are concentric helical coils designated as a primary with many turns and a secondary with fewer turns than the primary. The primary coil is connected at one end to the probe and at the other end to the secondary coil. The leads from the secondary coil are con-

nected to the relaxation oscillator by way of an adjustable capacitor. Oscillation within the envelope is resonance amplified, and the induced voltage in the secondary coil is rectified for application to the relaxation oscillator and lamp. Selenium and germanium base semiconductor compositions including Te, Nd, Rb and Ga in varying proportions are used for the tablet.

3,766,095

COMPOSITIONS OF MATTER CONTAINING FERROMAGNETIC PARTICLES AND NON-FERROMAGNETIC ALUMINUM PARTICLES IN AN ELASTIC MATERIAL

Sebastian Vito Rocco Mastrangelo, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 2, 1971, Ser. No. 194,943

Int. Cl. H01b *1/02*; H01c *7/10*

U.S. Cl. 252—513 **16 Claims**

Compositions of matter comprising aluminum particles, iron or other ferromagnetic particles and an elastic binder for cementing the particles into a coherent mass.

3,766,096

COMPOSITIONS OF MATTER CONTAINING FERROMAGNETIC PARTICLES WITH ELECTRICALLY INSULATIVE COATINGS AND NONMAGNETIC ALUMINUM PARTICLES IN AN ELASTIC MATERIAL

Sebastian Vito Rocco Mastrangelo, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 2, 1971, Ser. No. 194,950

Int. Cl. H01b *1/02*; H01c *7/10*

U.S. Cl. 252—513 **18 Claims**

Compositions of matter comprising aluminum particles, iron or other ferromagnetic particles with electrically insulative coatings and an elastic binder for cementing the particles into a coherent mass.

3,766,097

DETERGENT (SOAP) COMPOSITIONS

Philip F. Rosmarin, 200 E. 66th St., New York, N.Y. 10021

No Drawing. Filed Aug. 9, 1971, Ser. No. 170,372

Int. Cl. C11d *1/12, 1/72, 1/83*

U.S. Cl. 252—552 **28 Claims**

A composition useful for the manufacture of a detergent composition evidencing unusual emollience and skin cleansing action consists essentially of about 5–15% by weight beeswax, 5–15% by weight of a polyhydric alcohol selected from the group consisting of propylene glycol and glycerin, 30–50% by weight of a poloxalene having an average molecular weight of about 11,500, poloxalene being a poly(oxyethylene)-poly(oxypropylene)-poly(oxyethylene) polymer also known as dipolyoxyethylated polypropyleneglycol ether or oxyethylene oxypropylene polymer, a block polymer of ethylene oxide and propylene oxide, and 30–50% by weight of a fatty alkyl ester isethionate. A particularly useful composition is a homogeneous solid admixture consisting essentially of about 9% by weight beeswax, 9% by weight propylene glycol, 40% by weight of poloxalene having a molecular weight of about 11,500, e.g. Pluronic F–127, manufactured by BASF Wyandotte Corp., about 40% by weight of a coconut oil acid ester of sodium isethionate, such as Igepon AC–78, manufactured by GAF Corp., 2% by weight of a non-ionic or anionic surfactant, such as sodium lauryl sulfate, e.g. Duponol C, manufactured by E. I. du Pont de Nemours & Co., or Avirol 122, manufactured by Standard Chemical Company, about 0.1–1.0% by weight allantoin and about 0.1–1% by weight of a perfume or scenting agent.

3,766,098

VOLTAGE-NONLINEAR RESISTORS

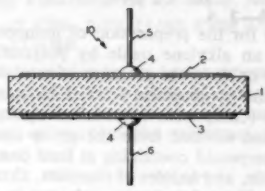
Takeshi Masuyama and Tsuyoshi Nishi, Osaka, and Toshioki Amemiya, Tokyo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed June 22, 1970, Ser. No. 48,333

Claims priority, application Japan, July 2, 1969, 44/53,638, 44/53,641; July 4, 1969, 44/54,238, 44/54,239, 44/54,240; Sept. 1, 1969, 44/70,424, 44/70,425, 44/70,426, 44/70,427, 44/70,428, 44/70,429

Int. Cl. H01b *1/06*

U.S. Cl. 252—519 **5 Claims**



A voltage nonlinear resistor has a sintered wafer of, as a major part, zinc oxide and, as an additive, iron oxide and one member selected from the group consisting of nickel oxide, titanium oxide, magnesium oxide, manganese oxide, chromium oxide, cobalt oxide, barium oxide, strontium oxide, beryllium oxide, cadmium oxide and lead fluoride. A silver paint electrode is applied to at least one of the opposite surfaces of said sintered wafer.

3,766,099

PROCESS FOR PREPARATION OF ETHYLENIC RESIN FOAM

Isamu Kawai, Ageo, Atsuro Nishikawa, Suita, Osamu Takagi, Kuki-machi, Akira Iwata, Shimamoto-machi, and Kohei Sugiyama, Ibaraki, Japan

No Drawing. Original application Oct. 7, 1969, Ser. No. 864,549, now Patent No. 3,657,165. Divided and this application Dec. 7, 1971, Ser. No. 205,702

Int. Cl. C08f *29/04, 47/10*

U.S. Cl. 260—2.5 E **8 Claims**

A process of producing an ethylenic resin foam by mixing and kneading an ethylenic resin with a volatile organic foaming agent under heating and pressure to form a flowable gel and releasing the pressure by extruding out the gel, characterized by the use as said foaming agent of a mixture comprising (A) dichlorodifluoromethane and (B) at least one compound selected from monochloropentafluoroethane and octofluorocyclobutane. The foaming agent may additionally contain one or more compounds selected from aliphatic hydrocarbons having a boiling point of about 0–70° C. and chlorofluorohydrocarbons having a boiling point of 0–70° C.

3,766,100

RIGID PHENOLIC FOAMS SUITABLE FOR USE AS NON-FLAMMABLE INSULATING MATERIAL

Hans Albrecht Meyer-Stoll, Rheinkamp, and Heinz Berndt, Eick-Ost, Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed May 7, 1971, Ser. No. 141,379

Int. Cl. C08g *53/10*; C08j *1/26*

U.S. Cl. 260—2.5 FP **11 Claims**

Non-flammable, rigid, foamed phenol-formaldehyde resin compositions are prepared by first forming a mix-

ture of a phenol-formaldehyde resol solution, water glass and a foaming or expanding agent, and then adding an acid curing agent to initiate the foaming and curing reactions. Such compositions are useful as insulation materials, as structural elements, etc.

3,766,101

PROCESS FOR THE POLYMERIZATION OF ALKYLENE OXIDE AND CATALYST THEREFOR

Hisataka Komai, Kamakura, Tatuo Usui and Hirosi Hosozawa, Yokohama, Nubuhiro Kimura, Itami, and Hiroshi Yamamoto and Tetsuya Nakata, Ibaraki, Japan, assignors to The Japanese Geon Company, Ltd., Tokyo, and Osaka Soda Co., Ltd., Osaka, Japan

No Drawing. Filed June 8, 1971, Ser. No. 151,136
Claims priority, application Japan, June 9, 1970, 45/49,177
Int. Cl. C08g *23/14*
U.S. Cl. 260—2 A **1 Claim**

A process for the preparation of homopolymer or copolymer of an alkylene oxide by polymerizing at least one alkylene oxide in the presence of catalyst, the catalyst comprising the composition formed by mixing the reaction product (component 1) obtained by reacting at least one compound selected from the group consisting of an organotin compound containing at least one Sn-C linkage in its molecule, and halides of titanium, zirconium, hafnium, or tin, with a phosphoric acid ester in which the organic radical contains 1–12 carbon atoms; with a compound (component 2) selected from the group consisting of alkylation products of zinc, magnesium, aluminum, titanium, silicon or tin, alkoxides of zinc, magnesium, aluminum, titanium, silicon or tin, or halides of titanium, zirconium or tin.

3,766,102

MOLDED, MICROPOROUS, UNSATURATED, POLYESTER RESIN

Gerhard Josef Pietsch and Emil Alfred Vitalis, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 159,516, July 2, 1971. This application July 3, 1972, Ser. No. 268,383
Int. Cl. C08g *53/08*
U.S. Cl. 260—2.5 N **10 Claims**

There is provided a method for preparing a hard, porous article by effecting emulsion polymerization of an unsaturated polyester resin in the presence of a small, but effective, amount of the alkali metal salt of the sulfosuccinate diester of a monohydric aliphatic alcohol containing from 10 to 18 carbon atoms, thereby forming an unstable water-in-oil emulsion, curing the same and, thereafter, rapidly removing substantially all the water from the cured or hardened product to create voids therein, while preserving completely the article's integrity subsequent to molding.

3,766,103

PREPARATION OF FOAMS CHARACTERIZED BY CARBODIIMIDE LINKAGES

John T. Patton, Jr., Wyandotte, Moses Cenker, Trenton, and Peter T. Kan, Plymouth, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Original application Dec. 13, 1971, Ser. No. 207,567. Divided and this application Dec. 29, 1972, Ser. No. 319,541
Int. Cl. C08g *33/02*
U.S. Cl. 260—2.5 BF **8 Claims**

An adduct of 1,3,5-tris(3-dimethylaminopropyl)-s-hexahydrotriazine, an alkylene oxide and water has been found to be extremely active as a co-catalyst useful in the preparation of rigid cellular plastics characterized by carbodiimide linkages.

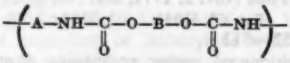
3,766,104

NON-THROMBOGENIC POLYMERS CONTAINING QUATERNARY AMMONIUM GROUPS TO WHICH MOLECULES OF HEPARIN ARE BONDED

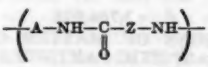
Yves Bonin, Lyon, and Claude Gigou, Vernaison, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed May 19, 1971, Ser. No. 144,993
Claims priority, application France, May 21, 1970, 7018568
Int. Cl. A61k *17/18*; C08b *25/00*
U.S. Cl. 260—9 **18 Claims**

A non-thrombogenic polymer is provided consisting essentially of a macromolecular chain containing quaternary ammonium groups to which groups molecules of heparin are bonded, the macromolecular chain containing 0.01 to 0.80 quaternary ammonium group per 100 g., and consisting essentially of *m* recurring units of formula:



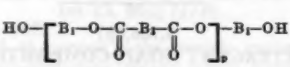
and *n* recurring units of formula:



in which:

A is a divalent organic radical which is a straight or branched-chain alkylene radical containing from 3 to 10 carbon atoms, a cycloalkylene radical having 5 or 6 ring carbon atoms or a phenylene radical which is unsubstituted or substituted by one or two lower alkyl radicals or consists of two cycloalkylene or phenylene joined together by a divalent hydrocarbon radical of 1 to 4 carbon atoms or by an oxygen, sulphur or nitrogen atom;

B is a divalent radical obtained by removal of the terminal hydroxyl groups from a polyester of formula



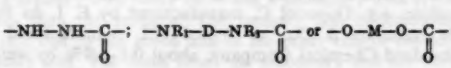
in which

B_1 is a linear or branched, saturated or ethylenically or acetylenically unsaturated, aliphatic hydrocarbon radical containing 2 to 12 carbon atoms, which is unsubstituted or substituted by one or two lower alkyl radicals or by a dialkylamino radical optionally containing an intermediate alkylimino radical;

B_2 is a hydrocarbon chain containing 2 to 12 carbon atoms, a divalent hydrocarbon ring having 5 or 6 carbon atoms, or a divalent nitrogen-containing heterocyclic structure with 5 or 6 ring atoms of which 1 or 2 are nitrogen atoms, the said hydrocarbon chains and rings being saturated or unsaturated, unsubstituted or substituted by one or two lower alkyl radicals or by a dialkylamino radical or by a nitrogen-containing heterocyclic structure with 5 or 6 ring atoms attached by a nitrogen atom, it being possible for two of the chains or rings to be joined together by an alkylimino group; and the said heterocyclic structures being unsubstituted or substituted by a lower alkyl radical;

p is a number such that the molecular weight of the polyester is between 300 and 10,000;

Z is a simple bond or a divalent radical which has the formula:



in which:

each of R_1 and R_2, which may be the same or different, is a hydrogen atom or a lower alkyl radical;

D is as defined under B_2, and M is as defined under B_1;

m and *n* are numbers such that the polymer has a specific viscosity, measured at 20° C. on a 2 g./l. solution in dimethylformamide, between 0.05 and 0.9, the ratio *m*/*n* being from 0.5 to 10, and

at least one of the radicals B, D and M contains at least one quaternary ammonium group.

3,766,105

COLORING OF TEXTILES AND PAPER

Kam H. Chan, Greenville, S.C., assignor to The Mearl Corporation, Ossining, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 767,000, Oct. 11, 1968. This application July 22, 1971, Ser. No. 165,332

Int. Cl. C08g *9/10, 9/30*

U.S. Cl. 260—15 **5 Claims**

A water-in-oil or oil-in-water emulsion containing a nacreous material, a resin, an organic solvent, water, and an emulsifying agent is employed in roller or screen printing on paper and textile fabrics.

3,766,106

RESIN COMPOSITIONS CONTAINING MAINLY POLYVINYL CHLORIDE SUITABLE FOR PRODUCING BATTERY SEPARATOR

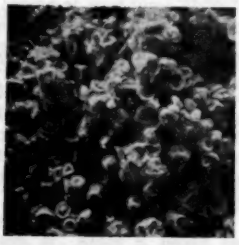
Juntaro Yurimoto and Ikoh Ito, Niihama, Takashi Kiku, Hirakata, and Toshiki Doi and Takeshi Sekihara, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed June 1, 1971, Ser. No. 148,658

Claims priority, application Japan, June 4, 1970, 45/48,960

Int. Cl. C08f *29/24, 45/04, 45/58*

U.S. Cl. 260—17 A **7 Claims**



A resin composition comprising (i) 100 parts by weights of a mixture consisting of 50 to 95% by weight of a suspension-polymerized polyvinyl chloride having an average particle size of 10 to 40μ, and an average polymerization degree of 700 to 1,400 which has been prepared by suspension-polymerizing vinyl chloride in the presence of cellulose derivatives containing alkyl group and/or hydroxy-alkyl group in their units as a suspension stabilizer and an anionic emulsifying agent as an auxiliary suspension stabilizer and 50 to 5%, by weight of an emulsion-polymerized polyvinyl chloride having an average polymerization degree of 700 to 1,400 in which particles having an average primary particle size of 0.1 to 1.5μ have been agglomerated to particles having an average secondary particle size of 20 to 50μ, and (ii) 0.1 to 3 parts by weight of a nonionic antistatic agent is high in processability and is suitable for producing a battery separator excellent in mechanical strength and electric resistance.

3,766,107

EMULSIONS FOR TREATING ASPHALTS AND ASPHALT STRUCTURES AND METHODS OF EMPLOYING THE SAME IN THE TREATMENT OF ASPHALTS AND ASPHALT STRUCTURES

Fritz S. Rostler, Oakland, and Richard M. White, Contra Costa County, Calif., assignors to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Filed July 19, 1971, Ser. No. 164,084

Int. Cl. C08c *7/02, 11/68;* **C08d** *9/06*

U.S. Cl. 260—17.4 BB **29 Claims**

This invention relates to an improvement in the formulation of emulsions for treating of asphalt pavements and other asphalt-bound structures, said emulsions employing saponin as part of the surfactant employed in said emulsions.

3,766,108

POLYVINYL ACETATE BALLOON MAKING SYSTEM

Shieu Shin Liwa, Taichung Hsien, Taiwan, assignor to Mutron Industries, Ltd., Kowloon, Hong Kong

No Drawing. Continuation of abandoned application Ser. No. 45,921, June 12, 1970. This application Apr. 13, 1972, Ser. No. 243,891

Int. Cl. A63h *3/06;* **C08b** *25/02*

U.S. Cl. 260—23 R **10 Claims**

A system for producing toy balloons or bubbles and a process for obtaining the balloon making product. The system utilizes polyvinyl acetate as the elastomer together with an opacifying agent, a texturing agent and a solvent for the polyvinyl acetate. Depending on the tint desired, a coloring agent may also be added. The system is produced by mixing and heating the opacifying texturing agents, adding the solvent together with the desired colorant under continued application of heat and thereafter adding the polyvinyl acetate to the prepared mixture with additional mixing until a thoroughly homogeneous product is obtained.

3,766,109

EPOXY POWDERS CONTAINING SMA COPOLYMERS

Richard J. Pratt, Arlington Heights, Arthur W. Crowley, Hazel Crest, Steven B. Nason, Chicago, and William R. Schmehr, Hoffman Estates, Ill., assignors to Atlantic Richfield Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 81,158, Oct. 15, 1970. This application Jan. 26, 1973, Ser. No. 326,925

Int. Cl. C08g *45/04*

U.S. Cl. 260—23 EP **3 Claims**

A process for the preparation of improved thermosetting powder compositions containing styrene-maleic anhydride resins, epoxy resins, low melting anhydrides and a curing catalyst utilizes initial melt-mixing and mill-roll catalyzing procedures before grinding to achieve "B-staging" or "partial curing" of the compositions. The resultant free flowing powders have long shelf-life and are useful for fluidized bed and spray coatings and one step molding and transfer molding operations.

3,766,110
SOLVENT-FREE PRINTING INKS
Joseph G. Curado, Rutherford, and Redento R. Rampo, Wood-Ridge, N.J., assignors to Sun Chemical Corporation, New York, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 652,405, July 11, 1967. This application May 13, 1968, Ser. No. 728,778
Int. Cl. C08g *17/16, 39/00*
U.S. Cl. 260—26 9 Claims

A solvent-free thermosetting ink composition comprises (1) a mixture of at least two of the following: an unsaturated monomer, a prepolymer, and a polymer, (2) an inhibitor, and/or (3) a catalyst as required by the system with or without a colorant.

3,766,111
POLYESTER MOULDING AND COATING MATERIALS WHICH CAN BE SET BY ULTRAVIOLET IRRADIATION
Wolfgang Metzner, Krefeld, Hans Rudolph, Krefeld-Bockum, Karl Fuhr, Krefeld, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Bayer Aktiengesellschaft
No Drawing. Continuation of application Ser. No. 147,647, May 27, 1971, which is a continuation of application Ser. No. 889,286, Dec. 30, 1969, both now abandoned. This application July 27, 1972, Ser. No. 275,889
Claims priority, application Germany, Jan. 22, 1969, P 19 02 930.2
Int. Cl. C08g *51/52;* C08f *19/00;* C01j *1/12*
U.S. Cl. 260—28 9 Claims

The invention relates to moulding and coating compositions which can be set by U.V. irradiation comprising mixtures of unsaturated polyesters and copolymerisable monomeric compounds, sensitized by an effective amount of benzoin ethers of primary alcohols and stabilized by an effective amount of copper compounds. The compositions are distinguished by a high storage stability in the dark and a high reactivity under U.V. radiation, while the curing velocity is additionally increased by infrared rays.

3,766,112
LATEX FOR HIGH GLOSS FLOOR POLISH FORMULATIONS
Edward A. Blackford, Jr., Coraopolis, Pa., assignor to Sinclair-Koppers Company
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,278
Int. Cl. C08f *45/30*
U.S. Cl. 260—28.5 R 5 Claims

An internally plasticized and cross-linked acrylic type emulsion polymer is produced by incorporating a chlorinated paraffin wax into the polymer through the use of a polyvinyl pyrrolidone protective colloid. The polymer emulsion is particularly suitable for use in preparing high gloss floor polish compositions.

3,766,113
GRAFT POLYMERS OF LOW MOLECULAR WEIGHT STYRENE-MALEIC ANHYDRIDE RESINS AND HETEROCYCLIC COMPOUNDS AND WATER-SOLUBLE SALTS THEREOF
Robert C. Strand, New City, N.Y., and Donald L. Marion, Homewood, and Dennis G. Anderson, Chicago, Ill., assignors to Sinclair Oil Corporation, New York, N.Y.
No Drawing. Filed Jan. 22, 1969, Ser. No. 793,178
Int. Cl. C08f *45/24, 45/52*
U.S. Cl. 260—28.5 R 3 Claims

Graft polymers of low molecular weight styrene-maleic anhydride resins with heterocyclic compounds such as ε-caprolactam, 2-pyrrolidone or N-methyl - 2 - pyrrolidone, as well as the water-soluble alkali metal or ammonium salts of said graft polymers and aqueous solutions of such salts are disclosed. Such compositions are useful, for example, in floor polish compositions.

3,766,114
BLENDS OF BLOCK POLYMERS AND MICROCRYSTALLINE WAXES
John H. Walker and Fay W. Bailey, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Continuation-in-part of abandoned application Ser. No. 814,795, Apr. 9, 1969. This application Apr. 8, 1971, Ser. No. 132,535
Int. Cl. C08f *19/08, 45/52*
U.S. Cl. 260—28.5 B 10 Claims

Blocking characteristics of radial or linear block polymers are essentially eliminated in a composition formed by blending particular microcrystalline paraffin waxes with radial or linear block polymers.

3,766,115
FINISH COMPOSITION FOR APPLICATION TO A CONTINUOUS FILAMENT POLYPROPYLENE SHEET
Seymour Sands, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 21, 1971, Ser. No. 145,892
Int. Cl. C08f *45/50;* D06p *5/06*
U.S. Cl. 260—29.1 SB 6 Claims

A finish composition is provided for applying to a spunbonded continuous filament polypropylene sheet intended for use as a primary carpet backing. The finish comprises a mixture of two polysioxlane components in a ratio from 9:1 to 1:9 by weight; the first said component being a dyeable component comprising a primary or secondary aminoalkylpolysiloxane or aminoalkoxyalkylpolysiloxane fluid having an amine functionality in the range 4–7%, and being substantially free from other reactive groups; and the second said component being a lubricant component comprising a polydialkyl/arylsiloxane fluid having hyydroxyl end groups and being substantially free from other reactive groups.

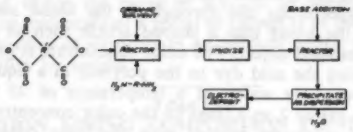
3,766,116
PRINTING INK COMPOSITIONS CONTAINING AN ALKANOLAMINE SALT OF AN ALIPHATIC ALPHA-OLEFIN/ACRYLIC ACID COPOLYMER
Gary V. Olhoft, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 763,926, Sept. 30, 1968. This application Apr. 13, 1971, Ser. No. 133,741
Int. Cl. C08d *11/02;* C08f *45/24*
U.S. Cl. 260—29.6 HN 23 Claims

Inks having low foaming tendencies, good pigment dispersing properties, stable viscosities can be formulated from a mixture of pigment and a carboxyl-containing aliphatic α-olefin polymer salt containing at least 80 mole percent of an α-olefin having up to 10 carbon atoms and 4 to 20 mole percent of an α,β-ethylenically unsaturated carboxylic acid copolymerized therein, dispersed in water and/or alkylene glycols. This polymer salt has about 30 to 100 percent of its carboxylic acid groups neutralized with an alkanolamine.

3,766,117
METHOD OF MAKING A DISPERSION FROM POLYAMIDE-ACID
James M. McQuade, Fort Wayne, Ind., assignor to General Electric Company
Filed Mar. 12, 1970, Ser. No. 18,817
Int. Cl. C08g *20/24;* C23b *13/00*
U.S. Cl. 260—29.2 N 6 Claims

A preparation of electrodepositable polyamic acid is prepared within an organic solvent system, which is substantially water free, and is imidized to yield the desired viscosity. The polyamic acid is then treated with a base to render it at least partially water soluble and water is then added to precipitate at least a portion of the polyamic acid as a dispersion within the continuous phase consisting essentially of organic-and-water solvents which

are miscible. The dispersion is stable and is electrodepositable to form films in thicknesses heretofore unattainable. The amount of base added is sufficient to preclude a curding of the polyamic acid upon the addition of water and yet such base addition is not so great as to produce total solubility of the polyamic acid upon the addition of the water.



The amount of polyamic acid in the continuous phase should not exceed 3% by weight of the continuous phase on an absolute basis.

3,766,118

WATER-SOLUBLE ALKYD RESINS

Kenneth H. Albers, Thomas C. Snapp, Jr., and Alden E. Blood, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 237,123
Int. Cl. C08g *20/30, 41/00*
U.S. Cl. 260—29.2 N 16 Claims

This invention relates to a curable, water-soluble alkyd resin useful in an improved protective coating composition. The resin is produced through the polycondensation of N - (2 - hydroxyalkyl)-2-hydroxyethoxyacetamide, aliphatic polyols having at least three hydroxyl groups, and one or more polycarboxylic acids or anhydrides having at least to carboxyl groups. If desirable, a trioletheramide such as N,N-bis(2-hydroxyethyl)-2-hydroxyethoxyacetamide may be used in combination with or in place of the aliphatic polyols.

3,766,119

WATER-SOLUBLE ALKYD RESINS FROM DI(2 - HYDROXYETHOXYACETAMIDO) ALKYLETHANES

Thomas C. Snapp, Jr., Alden E. Blood, and Kenneth H. Albers, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Mar. 22, 1972, Ser. No. 237,124
Int. Cl. C08g *20/30, 41/00*
U.S. Cl. 260—29.2 N 17 Claims

This invention relates to a curable, water-soluble alkyd resin useful in an improved protective coating composition. The resin is produced through the polycondensation of di(2-hydroxyethoxyacetamido)alkylethanes, aliphatic polyols having at least three hydroxyl groups, and one or more polycarboxylic acids or anhydrides having at least two carboxyl groups. If desirable, a trioletheramide such as N,N - bis(2-hydroxyethyl)-2-hydroxyethoxyacetamide may be used in combination with or in place of the aliphatic polyols.

3,766,120

SODIUM SULFATE COATED POLYACRYLAMIDE GEL PARTICLES

David Benedict Gershberg, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Oct. 21, 1971, Ser. No. 191,333. Divided and this application Sept. 15, 1972, Ser. No. 289,518
Int. Cl. C08l *47/02, 29/00*
U.S. Cl. 260—29.6 Z 5 Claims

An aqueous gel of acrylamide polymer in particulate form having sodium sulfate coated on substantially all outer surfaces thereof is a useful intermediate in the process of preparing dry acrylamide polymers. The coated gel particles have reduced tack and are more free flowing in the drying process.

3,766,121

VISCOSITY STABLE CHLOROPRENE/SULFUR POLYMER AND ITS PREPARATION

William Lee Fichteman, Louisville, Ky., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 126,363, Mar. 19, 1971. This application Aug. 30, 1972, Ser. No. 285,092
Int. Cl. C08d *7/00*
U.S. Cl. 260—29.7 SO 14 Claims

Process for producing a viscosity stable chloroprene/sulfur polymer by polymerizing in aqueous emulsion in the presence of a dialkyl xanthogen disulfide and an alkali sulfite or alkali thiosulfate. Also chloroprene/sulfur polymer having improved viscosity stability prepared thereby.

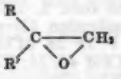
3,766,122

POLYISOBUTYLENE OXIDE COMPOSITIONS

Hideo Sawada, Keichi Ohata, and Nagayoshi Tsukane, Saitama, Japan, assignors to Daicel Ltd., Osaka, Japan

No Drawing. Filed July 20, 1972, Ser. No. 273,373
Claims priority, application Japan, Aug. 21, 1971, 46/63,865
Int. Cl. C08g *43/00*
U.S. Cl. 260—30.4 R 1 Claim

Polyisobutylene oxide compositions containing 1–20 wt. percent, based on polyisobutylene oxide, of an α-olefin oxide or mixture of two or more α-olefin oxides of the general formula:



wherein each of R and R′ represents hydrogen or a straight chain, saturated alkyl group, with the sum of the carbon atoms in R plus R′, being in the range of from 14 to 40.

3,766,123

METHOD OF RENDERING HYDROPHOBIC THE SURFACE OF A TRANSPARENT SHEET AND SURFACE-CONDITIONING COMPOSITION THEREFOR

Robert T. Burnie, Renton, Wash., David W. Clarke, Callicoon, N.Y., and Wilson S. Hamilton, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

No Drawing. Filed July 30, 1965, Ser. No. 476,195
Int. Cl. C09k *3/18;* C08g *31/09, 31/44*
U.S. Cl. 260—32.4 2 Claims

A substantially solid stream of surface conditioning composition liquid is projected onto an aircraft windshield substantially in the direction of airflow over the windshield and at an angle of 10° to 45° to the plane of the windshield, and a spreading component of the composition will cause the composition to spread rapidly over a large area of the windshield surface without assistance of a mechanical device such as a windshield wiper. A composition which will maintain reasonable

good visibility through the windshield for a period up to 10 or 15 minutes includes a mixture of a repellent component which is a copolymer of the silicotitanium type, silicosilicon type or silicozirconium type of about 5% by weight, a spreading component which may be a cationic amino chemical in which the cation portion of the molecule has at least four carbon atoms, and a solvent component for the repellent component and the spreading component which may be a hydrocarbon, an alcohol, or 1,1,2-1,2,2-trichlorotrifluoroethane.

3,766,124

PROCESS FOR MODULATING THE CURING EXOTHERM OF THERMOSETTING HIGH-VINYL POLYBUTADIENE

Dale A. Tompkins, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed May 20, 1971, Ser. No. 145,566
Int. Cl. C08c *11/22*; C08d *1/20*
U.S. Cl. 260—33.6 AQ 12 Claims

The process disclosed herein comprises the curing of a thermosetting high-vinyl polybutadiene polymer while in intimate admixture with 1–30% of a hydrocarbon oil having a substantial portion of aliphatic hydrocarbon therein. It is found that such thermosetting polymers when cured with free radical generating catalysts such as peroxy compounds will generate an exotherm which very often causes crazing, cracking and bubble formation in the casting. The larger the casting the more likelihood there is for such defects to occur. The presence of the oil during the curing modulates the exotherm to a lower temperature, thereby reducing the possibilities for formation of cracks, crazing and bubble formation that generally otherwise occur. This makes it possible to make a pourable resin composition as an encapsulating material that can be cured in substantial volume without the formation of cracks, crazing and bubbles.

3,766,125

DISPERSION OF FINELY DIVIDED SUBSTANCES IN AN ISOPARAFFIN APOLAR DISPERSING AGENT

Norbert Ernst Fritz Hansen and Siegfried Wilhelm Stotz, Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed June 3, 1970, Ser. No. 43,223
Claims priority, application Germany, June 6, 1969, P 19 28 817.6
Int. Cl. C08f *45/28*; C23b *13/00*
U.S. Cl. 260—33.6 R 4 Claims

A dispersion of finely divided substances in an apolar dispersing agent containing surface-active ion-forming substances, said dispersion being useful in an electrophoretic method of depositing finely divided particles.

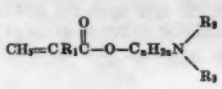
3,766,126

COLOR CONCENTRATE FOR MASS DYEING OF MATERIALS

John Carl Siegle and Homer Bagenstose Wolfe, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 66,875, Aug. 25, 1970. This application Feb. 14, 1972, Ser. No. 226,271
Int. Cl. C08g *51/14*; C08f *45/14*
U.S. Cl. 260—37 N 24 Claims

A color concentrate is provided which enables shaped articles from polymers such as polyolefins, polyesters, vinyl chloride polymers and vinylidene chloride polymers to be easily colored. The color concentrate consists essentially of a thermoplastic amine polymer, protonated salt thereof, or quaternary salt thereof, and from 10 percent up to the stoichiometric amount of an acid dye attached to the amine groups of the polymer. Preferably, the polymer comprises particles (preferably beads with a diameter of up to ⅛ inch) of a copolymer of about 95 to 50 mole percent ethylene and about 5 to 50 mole percent of an aminoalkyl acrylate compound of the formula:



wherein

R_1 is hydrogen or methyl,
R_2 and R_3 are each a member selected from the group consisting of hydrogen and alkyl of 1 to 4 carbon atoms, and
n is a positive integer of 1 to 4 inclusive.

Polymers are colored by melt blending about 0.01 to 15 percent of the color concentrate with another polymer so as to disperse the dye throughout the blend and then forming the blend into a shaped article such as a film, fiber or molded object. The color concentrate is prepared by applying the acid dye to the polymer in a liquid medium, preferably water, at a temperature of 25 to 85° C. and a pH of 2 to 7. Inks of the color concentrate and cellulosic substrates printed with the color concentrate are also provided.

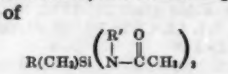
3,766,127

AMIDOSILICON LOW MODULUS ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMER

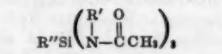
Joseph N. Clark, Midland, Irvin D. Crossan, Homer Township, Midland County, and Louis H. Toporcer, Ingersol Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,605
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 17 Claims

A composition stable under moisture free conditions and curable to a low modulus silicone elastomer at room temperature is a mixture of 100 parts by weight of a hydroxyl endblocked polydiorganosiloxane, 0 to 150 parts by weight of a non-acidic, non-reinforcing filler, 3.5 to 8 parts by weight of



in which R is methyl or vinyl, R′ is methyl, ethyl or phenyl and 0.3 to 4.2 parts by weight of



in which R′ is defined above and R″ is the same as R. The low modulus silicone elastomer is useful in building construction.

3,766,128

SILICONE ELASTOMER COMPOSITION CONTAINING AMIDOSILANE AND AMINOSILANE

Sam A. Brady and Joseph N. Clark, Midland, Irvin D. Crossan, Homer Township, Midland County, and Louis H. Toporcer, Ingersoll Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,749
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB 26 Claims

A low modulus room temperature vulcanizable silicone elastomer is obtained by curing a mixture of 100 parts by weight of a hydroxyl endblocked polydiorganosiloxane, 0 to 150 parts by weight of a non-acidic, non-reinforcing filler, 2 to 7.5 parts by weight methylvinyldi-(N-methylacetamido)silane and 0.5 to 4 parts by weight of an aminosilane of the formula $RSi(NR'R'')_3$ in which R is alkyl, phenyl or vinyl, R′ is hydrogen or alkyl and R″ is alkyl or phenyl. The low modulus silicone elastomer is useful in building construction.

3,766,129

PRE-IMPREGNATED MATERIALS

Gaston Pesez, Chauny, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France, fractional part interest to each

No Drawing. Filed July 9, 1971, Ser. No. 161,346
Claims priority, application France, July 9, 1970, 7025468
Int. Cl. C08g *51/04*
U.S. Cl. 260—40 R 17 Claims

Pre-impregnated materials of reinforcing fibers impregnated with a composition formed of a copolymerizable polyester resin formed of 50–98% by weight of a copolymerizable polyester resin and 50–2% by weight of a solution of an oligoester having terminal maleic acid groups and containing a polymerization initiator in an amount within the range of 0.5–2% by weight and an oxide or hydroxide of a metal of Group II of the periodic classification of elements in an amount within the range of 1–10% by weight.

3,766,130

FRICTION LINING COMPOSITION CONTAINING FLUOROCARBON PARTICLES

Howard R. Johnson, Ann Arbor, Mich., assignor to Kelsey-Hayes Company

Original application Feb. 14, 1969, Ser. No. 799,216. Divided and this application Dec. 14, 1970, Ser. No. 97,958
Int. Cl. C08f *45/10, 45/12;* C08g *51/12*
U.S. Cl. 260—41 A 4 Claims

An improved friction lining composition for vehicle brakes and the like possessing controlled dynamic friction properties and comprising a reinforcing material, conventional fillers and/or friction-modifying additives, a bonding agent and a controlled amount of a particulated fluorocarbon plastic dispersed throughout the lining.

3,766,131

GLASS REINFORCED THERMOPLASTIC COMPOSITIONS WITH METALLOCENE COUPLING AGENTS

Barry C. Arkles, Malvern, Pa., assignor to Liquid Nitrogen Processing Corporation, Malvern, Pa.

No Drawing. Filed May 11, 1971, Ser. No. 142,353
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 AG 12 Claims

Thermoplastic resin composites reinforced with glass fibers and having improved mechanical and high temperature properties may be made by incorporating a small percentage of a metallocene coupling agent in the composite. Suitable metallocenes include titanocene, hafnocene and zirconocene dihalides; titanocene disulfonates; and stable derivatives thereof, any of which may be used with or without a conventional silane coupling agent. Stable ferrocene derivatives may also be used in combination with a reactive silane. The metallocene coupling agent may be applied directly to the glass fibers, or mixed with the thermoplastic resin or composite blend.

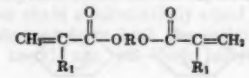
3,766,132

DIACRYLATE ESTERS OF LOW VISCOSITY AND THE USE THEREOF AS BINDERS IN DENTAL RESTORATIVE COMPOSITIONS

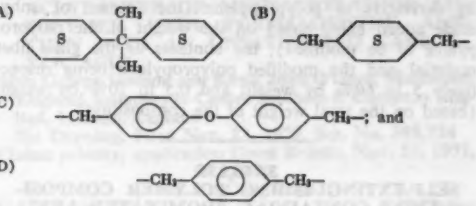
Henry L. Lee, Jr., San Marino, and Donald G. Stoffey, Hacienda Heights, Calif., Albert F. Stang, Dusseldorf, Germany, and Jan Alexander Orlowski, Altadena, Calif., assignors to Lee Pharmaceuticals, South El Monte, Calif.

No Drawing. Filed Feb. 12, 1971, Ser. No. 115,068
Int. Cl. A61k *5/02;* C08f *3/64, 45/04*
U.S. Cl. 260—41 A 5 Claims

Compounds of the formula:



wherein R is selected from



and R_1 is hydrogen, lower alkyl, or halogen, are utilized as binders in dental restorative compositions. The compounds are prepared by the reaction of an acryl chloride and derivatives thereof with the appropriate diol.

3,766,133

POLYTETRAFLUOROETHYLENE FILLED AND UNFILLED MOLDING POWDERS AND THEIR PREPARATION

Robert Roberts and Roland Fitzhugh Anderson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 307,318, Sept. 9, 1963. This application July 16, 1971, Ser. No. 163,510
Int. Cl. C08f *3/24, 45/04*
U.S. Cl. 260—41 R 15 Claims

Improving powder flow of finely ground polytetrafluoroethylene resin by deagglomeration and controlled dry or wet reagglomeration. The products are agglomerates of filled or unfilled finely ground polytetrafluoroethylene resins having an apparent density of 400 to 1100 grams per liter and a powder flow index of at least 4 grams per second.

3,766,134

ABS COMPOSITIONS FOR ELECTROPLATING WHICH CONTAIN ASBESTOS

Girish T. Dalal, Westlake, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 193,697, Oct. 29, 1971. This application Oct. 13, 1972, Ser. No. 297,249
Int. Cl. C08f *45/10*
U.S. Cl. 260—41.5 A 3 Claims

Improved ABS compositions for electroplating are provided which contain small amounts of asbestos for use in metal plated applications involving exposure to extreme variations in temperature and humidity. Metal plated articles of these compounds have satisfactory adhesion of metal to substrate and improved performance under extreme temperature conditions.

3,766,135

REINFORCED POLYPROPYLENE COMPOSITION AND ITS PRODUCTION

Saburo Yamanouchi, Kobe, Kiyoshi Yasuno, Ibaraki, Hiroshi Katsuki, Toyonaka, and Takayuki Terazawa, Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,900
Claims priority, application Japan, Apr. 16, 1970, 45/32,846; Apr. 17, 1970, 45/33,360
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 AG 11 Claims

A reinforced polypropylene composition which comprises polypropylene; a glass fiber material essentially consisting of glass fiber having 0.1 to 5% by weight of an adhesive layer of epoxy resin (based on the weight of the glass fiber) on its surface; and a modified poly-

propylene obtained by addition of 2 to 40% by weight of 3,6-endomethylene-Δ^4-tetrahydrophthalic anhydride or its derivative to polypropylene (the amount of anhydride added being based on the weight of the polypropylene to be modified); the contents of the glass fiber material and the modified polypropylene being respectively 5 to 60% by weight and 0.5 to 10% by weight (based on the total weight of the composition).

3,766,136

SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING BROMINATED ARYLIDENE KETONES

Hilda Howell and Walter M. Kutz, Pittsburgh, Pa., assignors to Koppers Company, Inc.

No Drawing. Continuation-in-part of application Ser. No. 728,882, May 14, 1968. This application Jan. 21, 1971, Ser. No. 108,651

The portion of the term of the patent subsequent to Apr. 27, 1988, has been disclaimed

Int. Cl. C09k *3/28*

U.S. Cl. 260—45.7 R **4 Claims**

Solid organic polymers normally susceptible to burning are rendered self-extinguishing by incorporating therein a brominated arylidene ketone such as a brominated benzilidene or cinnamilidene ketone; for example, 1,5-diphenyl-1,2,4,5 - tetrabromo-3-pentanone. The self-extinguishing agents useful in the invention are unexpectedly stable to hydrolysis, yet are highly reactive as self-extinguishing agents.

3,766,137

STABILISED CHLORINATED RUBBER

Norman Leonard Watson, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,983

Claims priority, application Great Britain, Aug. 21, 1970, 40,421/70

Int. Cl. C08c *5/02;* **C08d** *5/04, 11/04*

U.S. Cl. 260—45.8 A **6 Claims**

A chlorinated rubber composition which comprises a stabilising amount of a cycloaliphatic epoxide.

3,766,138

POLYIMIDES

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company

No Drawing. Filed July 16, 1971, Ser. No. 163,410

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CZ **11 Claims**

Polyamides are obtained from the reaction of an oligimeric bis-imide and a sulfide such as hydrogen sulfide, an organic dithiol, or mixtures of such sulfides in the presence of a proton donor. These polymeric compositions have uses in packaging and molding applications, as insulating materials, and as membranes for the separation of gases.

3,766,139

THERMAL OXIDATIVELY STABLE POLYCARBONATE COMPOSITION

Charles A. Bialous, Mount Vernon, and Donald B. G. Jaquiss, New Harmony, Ind., assignors to General Electric Company

No Drawing. Original application Apr. 15, 1970, Ser. No. 28,988. Divided and this application July 29, 1971, Ser. No. 167,485

Int. Cl. C08g *17/13, 51/58*

U.S. Cl. 260—47 XA **5 Claims**

A thermal oxidatively stable polycarbonate composition consisting of the reaction product of bisphenol-A, a carbonate precursor and a minor amount of phosphorus dihalide and to a process for preparing the stable polymer composition which consists of adding 0.0005 to about 0.01 mole of a phosphorus dihalide per mole of bisphenol-A to the reaction medium.

3,766,140

FILM FORMING POLYESTERS FROM HALOGENATED PHENOLS AND A MIXTURE OF ISOPHTHALIC AND TEREPHTHALIC ACID AND ELECTRICAL INSULATION OF SAME

Roshdy Ismail, Spich, Germany, assignor to Dynamit Nobel AG, Troisdorf, Germany

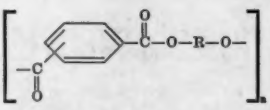
No Drawing. Continuation of application Ser. No. 835,918, June 23, 1969. This application July 30, 1971, Ser. No. 167,793

Claims priority, application Germany, June 21, 1968, P 17 70 686.4

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C **7 Claims**

Thermostable electrical insulation sheets, films, coatings and impregnations made from polyester polymers of the general formula



(I)

wherein *n* is a whole number from 80 to 300, preferably from 100 to 255, and R represents a bivalent organic radical which contains two chlorinated phenylene radicals, and may contain, if desired, an alkylene group, a sulfonyl group or an oxygen atom between the two chlorinated phenylene radicals. The chlorinated phenylene moiety may constitute 1 to 40 mole-percent, of the polymer. About 20 to 99%, and preferably 30 to 80%, of the carbonyl ester groups on the non-chlorinated phenylene radical of the above formula are in the meta position in relation to one another, and the rest are in the para position.

3,766,141

POLYQUINOXALINES CONTAINING FLEXIBILIZING GROUPS IN THE POLYMER CHAIN

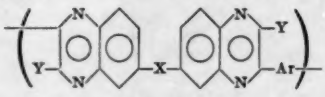
Joseph M. Augl, Sterling, Va., and Wolfgang J. Wrasidlo, Mercer Island, Wash., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,194

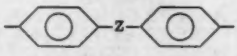
Int. Cl. C08g *33/02*

U.S. Cl. 260—47 R **9 Claims**

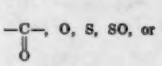
Polyquinoxalines consisting essentially of units of the formula



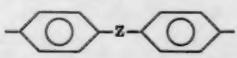
wherein Y is $-C_6H_5$ or H, Ar is m-phenylene, p-phenylene or



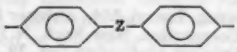
wherein Z is O, S, SO, or SO_2, and X is a direct bond



provided that when X is a direct bond, O, S, SO or SO_2, Y is $-C_6H_5$ and Ar is

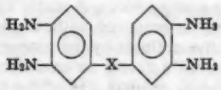


wherein Z is S, SO, or SO_2 and further provided that when Ar is m-phenylene, p-phenylene or

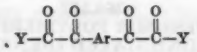


wherein Z is O, Y is $—C_6H_5$ and X is

are prepared by reacting a tetramine of the formula



with compounds of the formula



These polymers can be made into fibers or films and can be used as coatings and laminating resins.

3,766,142

ACRYLONITRILE COPOLYMERS

Eric Nield, Watton-at-Stone, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 767,481, Oct. 14, 1968, which is a continuation-in-part of applications Ser. No. 537,028, Mar. 23, 1966, and Ser. No. 729,891, May 17, 1968, now Patent No. 3,652,891, which in turn is a continuation-in-part of abandoned application Ser. No. 447,971, Apr. 14, 1965. This application Nov. 8, 1971, Ser. No. 196,743

Claims priority, application Great Britain, Apr. 21, 1964, 16,502/64; Nov. 6, 1964, 45,289/64; May 22, 1967, 23,670/67

Int. Cl. C08f *19/10*; C08g *33/02*

U.S. Cl. 260—47 UA **17 Claims**

The novel copolymers contain acrylonitrile (1–99 moles percent) and an N-arylmaleimide (99–1 mole percent). The copolymers may also comprise 25–90 mole percent acrylonitrile, from 1–25 mole percent of N-aryl maleimide and from 0–70 mole percent of at least one other ethylnically unsaturated monomer copolymerisable therewith. When the other monomer is an alkene or diene, the quantity is limited to the range from 0–50 mole percent, and where the other monomer is an aromatic olefin the molar ratio of aromatic olefin to acrylonitrile lies within the range 0.5–4, preferably 1–4. The copolymer is prepared by mixing the monomers together, preferably in a liquid diluent and polymerising the mixture under conditions of free radical catalysis.

3,766,143

BASIC-DYEABLE COPOLYESTER RESINS PREPARED FROM ORTHO AND PARA ISOMERS OF LOWER ALKYL-(SULFOALKOXY) BENZOATES

Mary J. Stewart, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.

No Drawing. Filed June 21, 1971, Ser. No. 155,245

Int. Cl. C08g *17/14*

U.S. Cl. 260—49 **9 Claims**

Linear copolyester resins containing as an integral part of the polymer chain a substantially equal number of terminal units derived from both the ortho and para isomers of a metal salt of lower alkyl-(sulfoalkoxy) benzoate.

3,766,144

COPOLYMERS PREPARED BY REACTING AN ACRYLAMIDE OR METHACRYLAMIDE COPOLYMER WITH FORMALDEHYDE AND THEN WITH AN UNSATURATED CARBOXYLIC ACID

Alan George Hudson and Kevin John O'Hara, Maidstone, England, assignors to Coates Brothers & Company Limited, London, England

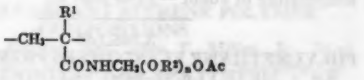
No Drawing. Filed Nov. 22, 1972, Ser. No. 308,724

Claims priority, application Great Britain, Nov. 25, 1971, 54,830/71

Int. Cl. C08g *9/36*

U.S. Cl. 260—72 R **8 Claims**

The invention provides a process for the preparation of a copolymer containing pendant ethylenically unsaturated side chains which comprises reacting a copolymer of acrylamide or methacrylamide with formaldehyde and reacting the resultant product with ethylenically unsaturated monocarboxylic acid, e.g. acrylic or methacrylic acid or hydroxyalkyl ester or hydroxycycloalkyl ester thereof. The resultant copolymer may be defined as containing repeating units derived from one or more ethylenically unsaturated monomers and reepating units of the formula:



in which R^1 is a hydrogen atom or a methyl group: R^2 is a divalent alkylene or cycloalkylene group; Ac is the acyl residue of an ethylenically unsaturated monocarboxylic acid; and *n* is 0 or 1.

3,766,145

PREPARATION OF UNSATURATED POLYESTERS OF ISOPHTHALIC ACID

Robert M. Thompson, Chalfonte, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed Aug. 6, 1971, Ser. No. 169,872

Int. Cl. C08g *17/00*

U.S. Cl. 260—75 EP **10 Claims**

Polyanhydride of isophthalic acid and either fumaric acid or maleic acid is prepared chemically or thermally. This polyanhydride is reacted with an ethylene epoxide or propylene epoxide to produce a polyester having ethylenically unsaturated double bonds useful as cross-linking sites.

3,766,146

SEGMENTED THERMOPLASTIC COPOLYESTER ELASTOMERS

William K. Witsiepe, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,860

The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 R **9 Claims**

Segmented thermoplastic copolyester elastomers containing recurring polymeric long chain ester units derived from dicarboxylic acids and long chain glycols and short chain ester units derived from dicarboxylic acids and low molecular weight diols. At least 80% of the dicarboxylic acid used is terephthalic acid and at least 80% of the low molecular weight diol is 1,4-butanediol. The short chain ester units constitute about 48–65% by weight of the polymer. Such copolyesters rapidly harden from the molten state and have outstanding physical properties, especially tear strength, abrasion resistance and flex life.

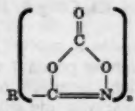
3,766,147

CONDENSATION OF CYCLIC NITRILE CARBONATES WITH FLUORIDE COMPOUNDS

Larry G. Wolgemuth, Cherry Hill, N.J., assignor to Atlantic Richfield Company, New York, N.Y.

No Drawing. Filed July 31, 1972, Ser. No. 276,640
Int. Cl. C08g *22/00*
U.S. Cl. 260—77.5 R 16 Claims

A method of preparing organic compounds having one or more urea, urethane or thiourethane groups by reacting cyclic nitrile carbonates of the formula:



wherein, R is an organic radical which is free of reactive hydrogen atoms and *n* is 1 or more, such as, adiponitrile carbonate, with nucleophilic compounds containing a reactive hydrogen atom, such as, polyester and polyether triols, in the presence of a catalytically-effective amount of an inorganic or an organic fluoride, such as, KF, CsF, RbF, tetraalkylammonium fluoride, etc. at a temperature of about —10 to 150° C.

3,766,148

POLYURETHANE ELASTOMERS PREPARED FROM 4,4 - METHYLENE-BIS(CYCLOHEXYL ISOCYANATE), POLYOL AND METHYLENE DIANILINE

Bernard Taub, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 794,763, Jan. 28, 1969. This application May 17, 1971, Ser. No. 144,210
Int. Cl. C08g *22/24*
U.S. Cl. 260—77.5 AM 14 Claims

Polyurethane elastomers of improved hydrolytic stability are obtained from 4,4'-methylene-bis(cyclohexylisocyanate), a polyol and methylene dianiline.

3,766,149

DIALLYL PHTHALATE-ETHYLENE PRECOPOLYMER AND PROCESS FOR PREPARATION THEREOF

Masayoshi Oiwa, Osaka, Akira Matsumoto, Suita, Kenji Yokoyama, Hata-machi, Hiromi Sasaki and Masao Tojima, Amagasaki, and Kazuya Matsumoto, Kobe, Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,745
Claims priority, application Japan, Mar. 15, 1971, 46/14,605
Int. Cl. C08f *15/02*
U.S. Cl. 260—78.5 HC 16 Claims

A diallyl phthalate-ethylene precopolymer comprising 20 to 95% by weight of a diallyl phthalate selected from the group consisting of diallyl ortho-phthalate, diallyl iso-phthalate, and diallyl terephthalate, and 80 to 5% by weight of ethylene, the amounts being based on the total weight of the monomers, and a process for the production thereof.

3,766,150

ADDITIVES FOR LUBRICANTS

Sidney Schiff and Gerald R. Kahle, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 780,887, Dec. 3, 1968. This application July 19, 1971, Ser. No. 164,092
Int. Cl. C08f *27/06*; C10m *1/38*
U.S. Cl. 260—79.3 R 11 Claims

Superior additives for lubricants are provided by a process comprising reacting a petroleum sulfonic acid with a polymer of a polymerizable heterocyclic nitrogen base, e.g., a vinylpyridine, and/or a polymer of a 1,2-alkylene imine. Lubricating oil compositions containing said additives are also provided.

3,766,151

NOVEL TERPOLYMER CONTAINING STYRENE, ACRYLONITRILE AND ANOTHER ACRYLIC MATERIAL

Denis K. Huang, Laurel, Md., assignor to Westvaco Corporation, New York, N.Y.

No Drawing. Original application Oct. 29, 1970, Ser. No. 843,240, now Patent No. 3,595,823. Divided and this application Jan. 13, 1971, Ser. No. 106,233
Int. Cl. C08f *15/40*
U.S. Cl. 260—80.73 2 Claims

A terpolymer comprising a major amount of styrene, and minor amounts of acrylonitrile and another acrylic material such as acrylamide, acrylic acid or methacrylic acid is disclosed, which has utility as an organic pigment in paper coating compositions. A stable aqueous emulsion of the terpolymer is prepared without the need for conventional protective colloids by the proper choice of emulsifiers and temperature during an emulsion polymerization process. The average particle size of the terpolymers produced ranges from about 0.1 to about 0.2 micron.

3,766,152

PROCESS FOR POLYMERIZING CONJUGATED DIENES

Adel Farhan Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Filed July 25, 1972, Ser. No. 274,928
Int. Cl. C08f *19/08, 1/28*; C08d *1/32*
U.S. Cl. 260—83.7 18 Claims

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight range, gives a higher Mooney value, and gives a more easily processed product. This catalyst system comprises (1) an alkyl lithium compound having 1–10 carbon atoms, (2) a secondary alkyl chloride selected from the class of secondary butyl chloride, secondary amyl chloride and isopropyl chloride, and (3) a divinyl aryl compound, preferably divinyl benzene. In the use of the combination of the secondary alkyl chloride and the divinyl benzene with the lithium hydrocarbon, a synergistic effect is achieved by which polymer properties are improved notably over the improvements effected by either of these components when used individually or in combinations of only two such components in such polymerizations.

3,766,153

PROCESS FOR PREPARING ALTERNATING COPOLYMER OF BUTADIENE AND ALPHA-OLEFINE AND NOVEL ALTERNATING COPOLYMER OF BUTADIENE AND ALPHA-OLEFINE CONTAINING CIS-CONFIGURATION BUTADIENE UNIT

Akihiro Kawasaki and Maruyama Isao, Ichihara, Japan, assignors to Maruzen Petrochemical Co., Ltd., Tokyo, Japan

Original application May 8, 1970, Ser. No. 35,637. Divided and this application Aug. 7, 1972, Ser. No. 278,416
Int. Cl. C08f *15/04, 19/08, 1/42*
U.S. Cl. 260—84.1 9 Claims

A process for preparing alternating copolymer of butadiene and α-olefine which comprises contacting butadiene and the α-olefine in liquid phase with a catalyst system comprising the first component of AlR_3 wherein R represents a hydrocarbon radical selected from the group consisting of alkyl, aryl and cycloalkyl radical in which at least one R is selected from the group consisting of alkyl having at least 3 carbon atoms per one molecule, aryl and cycloalkyl radical and the second component of TiX'_4 wherein X' is selected from the group consisting of chlorine, bromine and iodine, or a catalyst system comprising the first component of AlR_3 wherein R represents a hydrocarbon radical selected from the group consisting of alkyl, aryl and cycloalkyl radical, and the second component of TiX'_4 wherein X' is the same as that defined

above and the third component of a carbonyl group-containing compound. An alternating copolymer of butadiene and α-olefine, the microstructure of butadiene unit of the alternating copolymer contains cis-configuration. The alternating copolymers are rubber-like in character and can be used as polymeric plasticizers, in adhesives and can be vulcanized with sulfur or a sulfur compound to produce vulcanized elastomers.

3,766,154

POLYMERIZATION PROCESS EMPLOYING MULTIFUNCTIONAL POLYMERIZATION INITIATORS PREPARED FROM ALLYL-SUBSTITUTED TERTIARY AMINES

Floyd E. Naylor, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

No Drawing. Original application June 9, 1969, Ser. No. 831,753, now Patent No. 3,652,456. Divided and this application Nov. 18, 1971, Ser. No. 200,176

Int. Cl. C08f *1/32, 3/06, 19/08*

U.S. Cl. 260—84.7 **10 Claims**

Allyl-substituted tertiary amines are reacted with an organomonolithium compound to form multifunctional initiators.

3,766,155

METHOD FOR THE POLYMERIZATION OF ISOOLEFIN

Shunsuke Matsushima, Ibaraki, and Katsuji Ueno, Hirakata, Japan, assignors to Sumitomo Chemical Company, Limited

No Drawing. Filed Dec. 23, 1971, Ser. No. 211,650

Claims priority, application Japan, Dec. 29, 1970, 46/124,417

Int. Cl. C08d *3/04;* **C08f** *3/14*

U.S. Cl. 260—85.3 R **13 Claims**

A method for producing isoolefin homopolymers or copolymers is provided herein, which comprises polymerizing or copolymerizing an isoolefin, a mixture thereof, or a mixture of an isoolefin and diolefin copolymerizable therewith in the presence of a catalyst system comprising (1) a metal organic amide represented by the general formula, $M(NR_2)_mX_n$, wherein M is a metal atom, $m+n$ is the valence of the metal atom, R is an alkyl radical having from 1 to 12 carbon atoms, an aryl radical having from 6 to 10 carbon atoms, an aralkyl radical having from 7 to 12 carbon atoms, a cycloalkyl radical having from 6 to 10 carbon atoms, or a halogenated substituted thereof, and R's may be the same or different, and X is a halogen atom, and (2) boron trifluoride. The present invention is also directed to the above-defined catalyst combination, per se, useful for producing isoolefin polymers. By the use of the above catalyst system it is possible to produce isoolefin polymers having a high degree of polymerization at comparatively higher temperatures than conventional catalyst systems.

3,766,156

UNSATURATED QUATERNARY MONOMERS AND POLYMERS

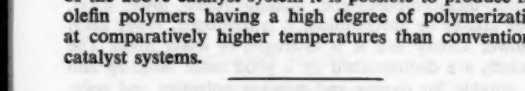
Benjamin B. Kine, Elkins Park, and William D. Emmons, Huntingdon Valley, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,060

Int. Cl. C08f *3/64, 3/66, 15/16*

U.S. Cl. 260—86.1 N **5 Claims**

This invention is concerned with monoethylenically unsaturated acid ester monomers, such as those of acrylic or methacrylic acid, containing a bis-quaternary ammonium halide group of the formula



R being H or methyl,
A being $(C_2–C_6)$-alkylene,
R^0 being lower alkyl,
R' being lower alkyl,
R^2 being lower alkyl,
R^3 being lower alkyl,
R^4 being lower alkyl,
X being an anion, and
Y being an anion.

It is also concerned with addition polymers of such monomers, and methods of producing the monomers and polymers. The monomers and polymers are reasonably stable at both alkaline and acid pH values under normal temperature and pressure conditions although capable of reacting with other reactants for the hydroxyl groups in the linkage of the quarternary nitrogen groups. The invention also concerns the use of these monomers and polymers as antistatic agents for textiles and other articles formed of hydrophobic materials, as wet-strength agents in making paper and as electroconductive aids in the making of various electroconductive papers for electrostatic image reproduction systems.

3,766,157

SMOKE-RETARDANT STYRENE POLYMER COMPOSITIONS

Leo P. Parts, Dayton, and John T. Miller, Jr., West Carrollton, Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

No Drawing. Filed Dec. 29, 1972, Ser. No. 319,964

Int. Cl. C08f *45/62*

U.S. Cl. 260—880 R **6 Claims**

Smoke-retardant polymer compositions comprising a styrene polymer and at least a sufficient amount of an iron, manganese or chromium 8-hydroxyquinolate to reduce smoking.

3,766,158

PROCESS FOR POLYMERIZATION OF OLEFINS

Kazuo Yamaguchi, Tokyo, Toru Tanaka and Shigeaki Okano, Yokohama, Nobuo Enokido, Kawasaki, and Hidetoshi Saruwatari, Yokohama, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

No Drawing. Filed June 4, 1971, Ser. No. 150,180

Claims priority, application Japan, June 6, 1970, 45/48,883

Int. Cl. C08f *1/42, 3/06*

U.S. Cl. 260—88.2 R **8 Claims**

Olefin polymerization is conducted using a two component catalyst system comprising (1) a hydrocarbon insoluble solid prepared by reducing a mixture of titanium tetrahalide and trialkyl vanadate with an organo aluminum compound and (2) an organo aluminum compound.

3,766,159

METHOD FOR CONTROLLING THE REACTION RATE IN THE SUSPENSION-POLYMERIZATION OF VINYL CHLORIDE

Shunichi Koyanagi and Shigenobu Tajima, Naoetsu, Japan, assignors to Shinetsu Chemical Company

No Drawing. Filed May 4, 1971, Ser. No. 140,290

Claims priority, application Japan, June 11, 1970, 45/50,881

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.8 W **8 Claims**

The polymerization is carried out in an aqueous polymerization system containing a suspending or dispersing agent and a polymerization catalyst. Gaseous vinyl chloride monomer produced during the reaction is condensed. Concurrently, a polymerization inhibitor is added to the system. The condensed gaseous vinyl chloride monomer absorbs the polymerization inhibitor. The combined condensed monomer and inhibitor are adsorbed by suspending particles including the monomer. The adsorbed condensed monomer is then vaporized. The polymerization system is

thereby agitated. Uniform distribution of the polymerization system is insured. Control of the polymerization reaction rate is facilitated.

3,766,160

POLYMERIZATION PROCESS

Anthony David Caunt, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 15, 1971, Ser. No. 165,765
Claims priority, application Great Britain, July 15, 1970, 34,315/70, 34,316/70; Apr. 23, 1971, 11,010/71, 11,011/71
Int. Cl. C08f *1/56, 3/10*
U.S. Cl. 260—93.7 **13 Claims**

An olefin polymeriaztion catalyst which comprises titanium trichloride, an organo-aluminum compound and a complex compound of an element of Group IV which is the product of reacting compounds of the type $ME_{b-o}R_o$ and H(X—G—L) were M is an element of Group IV of the Periodic System; E is —NR'_2 or —OR' where R' is methyl or ethyl; R is hydrocarbyl; X is O, S, NR or PR; G is a bivalent organic radical such that X and L are separated by not more than 3 carbon atoms; L is, for example, —OR; *b* is the valency of M; and *o* has a value of 0 to 2. The compound $ME_{b-o}R_o$ can be $Ti[N(CH_3)_2]_4$; $nBu_2Sn[N(CH_3)_2]_2$ or $Sn[N(CH_3)_2]_4$ and the compound H(X—G—L) can be an alkanolamine, a diamine or an aminothiol. The reaction product can be a simple compound of the type $ME_m(X—G—L)_nR_o$ where *m* is 0 to 3; *n* is 1 to 4; and *o* is 0 to 2; for example $nBu_2Sn[OCH_2CH_2N(CH_3)_2]_2$; $[(CH_3)_2N]Sn[OCH_2CH_2N(CH_3)_2]_3$ and

$$Sn[OCH_2CH_2N(CH_3)_2]_4$$

or a condensation product including more than one metal atom, the atoms being linked by —O— or —NR'—. The catalyst gives a lower proportion of soluble polymer compared to the system $TiCl_3$/organo-aluminum compound, when used to polymerize propylene.

3,766,161

PREPARATION OF POLYCYCLOPENTADIENE

Aaron Chung Liong Su, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 8, 1972, Ser. No. 251,136
Int. Cl. C08f *1/34*
U.S. Cl. 260—93.1 **7 Claims**

A homopolymer of a cyclopentadiene can be prepared by subjecting to polymer-forming conditions a reaction mixture in which the sole catalyst component is a vanadyl fluoride compound of the formula

In this formula, Z can be (1) OR wherein R is alkyl or aryl, (2) a beta-acyl ketonate or a fluorine-substituted derivative thereof, or (3) F, provided the compound is present in the form of a specified ether complex of VOF_3 having the formula $VOF_3 \cdot E_n$ wherein *n* is 1–3.

3,766,162

BARBITURIC ACID ANTIGENS AND ANTIBODIES SPECIFIC THEREFOR

Sidney Spector, Livingston, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Aug. 24, 1971, Ser. No. 174,517
Int. Cl. C07g *7/00*
U.S. Cl. 260—112 R **5 Claims**

Barbituric acid antigens are prepared by coupling 5- or 5,5-substituted barbituric acid to immunogenic carrier materials. In preferred embodiments, proteins are used as the carrier materials and the coupling is effected by an amide linkage between the 5-substituent of the barbituric acid and a carboxyl or amino group of the protein. The resulting antigens produce immunological effects when injected into host animals, including the formation of antibodies specific for 5- and 5,5-substituted barbituric acids. These specific antibodies are useful in bioanalytical techniques for the assay of barbituric acids in biological fluids.

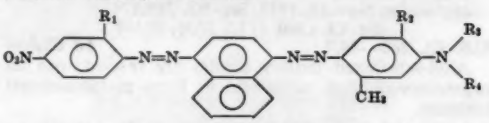
3,766,163

NAVY BLUE PHENYL-AZO-NAPHTHYL-AZO-m-TOLUIDINE DYES

John Blackwell, Kennett Square, Pa., and John Elton Cole, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 19, 1970, Ser. No. 38,891
Int. Cl. C09b *31/04*
U.S. Cl. 260—191 **2 Claims**

Navy blue disperse disazo dyes, useful for dyeing water swellable cellulosic or synthetic fibers or blends or mixtures thereof, the formula



wherein R_1 is H, R_5, OR_5, Cl, Br, NO_2, CN, CO_2R_5, CF_3, COR_5 or COC_6H_5,
R_2 is H, R_5 or OR_5,
R_3 and R_4 each is methyl or ethyl, and
R_5 is alkyl of 1–4 carbon atoms.

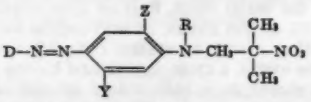
3,766,164

SUBSTITUTED 4-(2-NITROISOBUTYLAMINO)-AZOBENZENE

Reinhard Hahnle, Hofheim, Taunus, and Ernst Hoyer, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,082
Claims priority, application Germany, Nov. 17, 1969, P 19 57 681.9
Int. Cl. C09b *29/08, 29/26*
U.S. Cl. 260—205 **2 Claims**

Water-insoluble monoazo dyestuffs of the formula



wherein D as the rest of a diazo component is nitrophenylene, chlorophenylene, nitro-cyano-phenylene, nitrochloro-phenylene, nitro-trifluoromethyl-phenylene, dinitro-trifluoro-methyl-phenylene, - dinitro-chloro-phenylene or nitro-dichloro-phenylene, Y is hydrogen, lower alkyl, lower alkoxy or acetylamino, Z is hydrogen, lower alkyl or lower alkoxy and R is hydrogen or lower alkyl. The dyestuffs are distinguished by a good color build-up and are suitable for dyeing and printing polyester and polyester-containing fibers fast to light, washing and thermofixation.

3,766,165

POLYSACCHARIDES AND THEIR PREPARATION

Hans H. Rennhard, Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 116,610, Feb. 18, 1971, which is a continuation of application Ser. No. 794,476, Jan. 22, 1969, which in turn is a continuation-in-part of application Ser. No. 572,921, Aug. 17, 1966, all now abandoned. This application May 25, 1972, Ser. No. 257,001
Int. Cl. C07c *69/20, 69/32*
U.S. Cl. 260—209 R **10 Claims**

Non-nutritive carbohydrate substitutes are prepared by polycondensation of saccharides in the presence of polycarboxylic acid catalyst at reduced pressure.

3,766,166

PROCESS FOR OBTAINING WATER-SOLUBLE AESCIN FROM DRY HORSE CHESTNUT SEEDS EXTRACTS

Hans Georg Menssen, Geyen, and Hans Honerlagen, Frankfurt-Praunheim, Germany, assignors to A. Nattermann & Cie GmbH, Braunfeld, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 816,410, Apr. 15, 1969. This application Mar. 6, 1972, Ser. No. 232,276
Claims priority, application Austria, Apr. 17, 1968, 3,761/68
Int. Cl. A61k *27/14*
U.S. Cl. 260—210.5 5 Claims

Water soluble pure aescin having a melting point of 218° C. is obtained by dissolving a dry extract of horse chestnut seeds in a single phase mixture of n-propanol, ethyl acetate and water which is cold-saturated with borax, then bringing the solution into contact with acid activated aluminium oxide, and then fractionally eluting with a solvent mixture of n-propanol, ethyl acetate and water.

3,766,167

ORALLY ACTIVE ANTICOAGULANT

Sigmund E. Lasker, New York, N.Y., and Marie L. Chiu, Edgewater, N.J., assignors to Research Corporation, New York, N.Y.

Filed Mar. 26, 1971, Ser. No. 128,447
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R 1 Claim

Disclosure describes a new orally effective anticoagulant derived from heparin by controlled hydrolysis.

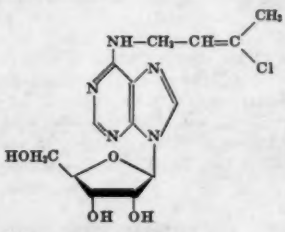
3,766,168

N^6-(CHLOROBUTEN - 2 - YL)-ADENOSINES AND PROCESSES FOR THE PREPARATION THEREOF

Helmut Vorbruggen, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,624
Claims priority, application Germany, Dec. 12, 1969, P 19 62 387.1
Int. Cl. C07d *51/54*
U.S. Cl. 260—211.5 R 3 Claims

Cis- and trans-isomers of N^6 - (3 - chlorobuten - 2-yl)-adenosine of the formula



possess anti-inflammatory activity.

3,766,169

PROCESS FOR THE PREPARATION OF 3-AMINOMETHYLIDENE - 1,5 - BENZODIAZEPINE-2,4-(3H,5H)-DIONES

Adolf Bauer, Ingelheim am Rhein, Karl Heinz Weber, Gau-Algesheim, and Karl-Heinz Pook, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Oct. 27, 1971, Ser. No. 193,181
Claims priority, application Germany, Nov. 2, 1970, P 20 53 681.6
Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B 5 Claims

A process for the preparation of a 3-aminomethylidene-5-phenyl-1,5-benzodiazepine-2,4-(3H,5H)-dione by reacting a 5-phenyl - 1,5 - benzodiazepine-2,4-(3H,5H)-dione with a phosphorus pentahalide and a dialkylformamide, optionally adding ammonia or a primary or secondary amine to the reaction mixture, and recovering the reaction product. the 3-aminomethylidene-5-phenyl-1,5-benzodiazepine-2,4-(3H,5H)-diones obtained thereby are useful as intermediates for the preparation of other 3-substituted 1,5-benzodiazepine-2,4-(3H,5H)-diones having tranquilizing and anticonvulsive properties.

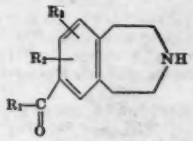
3,766,170

3-BENZAZEPINES AND SALTS THEREOF

Anton Mentrup, Kurt Schromm, Ernst-Otto Renth, and Richard Reichl, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim am Rhein, Germany

No Drawing. Filed Mar. 25, 1971, Ser. No. 128,170
Claims priority, application Germany, Apr. 4, 1970, P 20 16 136.8
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 BB 7 Claims

Compounds of the formula



wherein

R_1 is alkyl of 1 to 6 carbon atoms or trifluoromethyl, and R_2 and R_3, which may be identical to or different from each other, are each hydrogen or methyl,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as their salts are useful as appetite-curbers.

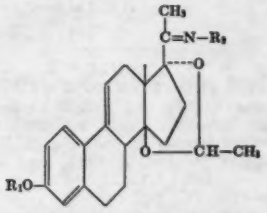
3,766,171

PREGNATETRAENES

Arthur Friedrich Marx and Hermanus Jacobus Kooreman, Delft, Netherlands, assignors to Koninklijke Nederlandsche Gist-en Spiritusfabriek, N.V., Delft, Netherlands

No Drawing. Filed Mar. 5, 1971, Ser. No. 121,581
Claims priority, application Great Britain, Mar. 6, 1970, 10,996/70
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D 40 Claims

New pregnatetraenes which possess oestrogenic and hypocholesterolemic activities have the following formula:



wherein R_1 represents a hydrogen atom, a lower alkyl group having less than 6 carbon atoms and which may be substituted by a dimethylamino group, or an acyl residue derived from an organic carboxylic acid or from an inorganic acid; R_2 represents a group OR_3, wherein R_3 represents a hydrogen atom, a lower alkyl group having less than 6 carbon atoms, an aryl group, an arylmethyl group or an acyl residue derived from an organic carboxylic acid or from an inorganic acid, or R_2 represents a group

wherein R_4 and R_5 may be the same or different and represent a hydrogen atom, a lower alkyl group having less than 6 carbon atoms, an acyl residue derived from an organic carboxylic acid, the carboxamide group or the group $—CO—CH_2—N^+(CH_3)_3Cl^-$.

3,766,172

SUBSTITUTED DICHLOROSULFENAMIDES AND THEIR MANUFACTURE

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed July 1, 1971, Ser. No. 159,034
Int. Cl. C07d *27/04, 41/00*
U.S. Cl. 260—239 BF **15 Claims**

Substituted dichlorosulfenamides are prepared from dichloromethyl sulfenyl chlorides by reaction with a primary or secondary amine. The substituted dichlorosulfenamides are pesticidally active and particularly useful as pre-emergent herbicides.

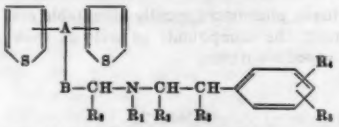
3,766,173

BASIC DITHIENYL COMPOUNDS

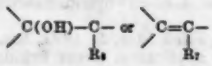
Kurt Thiele, Barcelona, Spain, and Klaus Posselt, Bergen-Enkheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

No Drawing. Continuation-in-part of applications Ser. No. 834,149, June 17, 1969, and Ser. No. 29,656, Apr. 17, 1970, both now abandoned. This application Oct. 13, 1970, Ser. No. 80,456
Int. Cl. C07d *63/12*
U.S. Cl. 260—240 R **18 Claims**

Compounds are prepared having the formula



where both thienyl groups can be substituted by one or more lower alkyl groups, the bridge member >A—B— is either



and R_1, R_2, R_6, R_7 and R_8 are hydrogen or lower alkyl, R_3 is hydrogen or hydroxyl and R_4 and R_5 are the same or different and are hydrogen, halogen, hydroxyl, lower alkyl, lower haloalkyl or lower alkoxy and their salts. The compounds can exist in optically active and diastereometric form. They are useful in heart and circulatory illnesses.

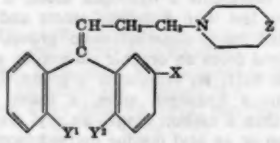
3,766,174

N-SUBSTITUTED PIPERIDINE COMPOUNDS

Michio Nakanishi, Oita, and Chiaki Tashiro and Kazuhiko Araki, Fukuoka, Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

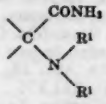
No Drawing. Filed Jan. 7, 1971, Ser. No. 104,770
Int. Cl. C07d *29/26*
U.S. Cl. 260—240 TC **7 Claims**

N-substituted piperidine compounds of the formula:

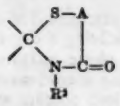


wherein X is a member selected from the group consisting of H, Cl, CH_3, CF_3, OCH_3 and SCH_3, each of Y^1 and Y^2 is H or Y^1 and Y^2 combined may represent a member selected from the group consisting of

$—CH_2—CH_2—$, $—CH=CH—$, $—C(CH_3)_2—$, —O— and —S—, or the carbon atoms of the benzene rings to which Y^1 and Y^2 are attached, may be directly combined to form a fluorine ring, and Z is



in which $—N(R^1)_2$ is a member selected from the group consisting of dimethylamino, piperidino and



in which A is a member selected from the group consisting of $—CH_2—$, $—CH_2—CH_2—$ and $—CH(CH_3)—$ and R^2 is a member selected from the group consisting of H and a lower alkyl group of from 1 to 2 carbon atoms, and the method of preparing same. These compounds are useful as psychotropic agents.

3,766,175

CERTAIN 7 - (o-AMINOMETHYLPHENYLACETAMIDO) - 3-[(HETEROCYCLYLTHIO)METHYL] CEPH-3-em-4-CARBOXYLIC ACIDS

Raymond Urgel Lemieux and Rintje Raap, Edmonton, Alberta, Canada, assignors to R & L Molecular Research Ltd., Edmonton, Alberta, Canada

No Drawing. Filed May 11, 1971, Ser. No. 142,337
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **19 Claims**

7-(o-aminomethylphenylacetamido)-3-[(1 - methyl-5-tetrazolylthio)methyl]ceph-3-em-4-carboxylic acid, 7-(o-aminomethylphenylacetamido)-3-[(5-methyl - 1,3,4-thiadiazolylthio)methyl]-ceph-3-em-4-carboxylic acid and 7-(o-aminomethylphenylacetamido)-3-[S-(1,2,3 - triazole-5-yl)-thiomethyl]-ceph-3-em-4-carboxylic acid and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-(o-aminomethylphenylacetamido)-3-[(1 - methyl-5-tetrazolylthio)methyl] ceph-3-em-4-carboxylic acid is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a tert.-butoxycarbonyl group.

3,766,176

CERTAIN 7 - (o-AMINOMETHYLPHENYL-THIOACETAMIDO) - 3 - [(HETEROCYCLYLTHIO) METHYL]CEPH-3-em-4-CARBOXYLIC ACIDS

Raymond Urgel Lemieux and Rintje Raap, Edmonton, Alberta, Canada, assignors to R & L Molecular Research Ltd., Edmonton, Alberta, Canada

No Drawing. Filed May 11, 1971, Ser. No. 142,338
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **19 Claims**

7-(o-aminomethylphenylthioacetamido)-3-[(1-methyl-5 - tetrazolylthio)methyl]ceph-3-em-4-carboxylic acid, 7-(o-aminomethylphenylthioacetamido)-3-[(5-methyl-1,3,4-thiadiazolylthio)methyl]-ceph-3-em-4-carboxylic acid and 7 - (o-aminomethylphenylthio)-acetamido-3-[S-(1,2,3-triazole - 5-yl)-thiomethyl]-ceph-3-em-4-carboxylic acid and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by many Gram-positive and Gram-negative bacteria. 7-(o-aminomethyl-

phenylthio)acetamido - 3 - [(1 - methyl-5-tetrazolylthio) methyl]ceph - 3-em-4-carboxylic acid is prepared, for example, by treatment at 0° C. with trifluoroacetic acid of the corresponding compound in which the free amino group is protected with a tert.-butoxycarbonyl group.

3,766,177
CERTAIN DELTA-3 CEPHALOSPORIN COMPOUNDS

J. Alan Webber and Earle M. Van Heyningen, Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 790,842, Jan. 13, 1969, which is a continuation-in-part of applications Ser. No. 703,523, Feb. 7, 1968, and Ser. No. 802,643, Feb. 26, 1969, which is a continuation-in-part of said application Ser. No. 703,523, all now abandoned. This application Aug. 17, 1970, Ser. No. 64,614

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **5 Claims**

3-methylthiomethyl- and 3-methoxymethyl-7-[2'-amino-2' - (3''-hydroxyphenyl)acetamido]-Δ^3-cephem-4-carboxylic acids, useful as antibiotics, which can be administered by the oral route.

3,766,178
SUBSTITUTED 2-ARYLALKYLOXY BENZAMIDES

Michel Leon Thominet, Paris, France, assignor to Societe d'Etudes Scientifiques et Industrielles de l'Ille-de-France, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 714,795, Mar. 21, 1968, now Patent No. 3,594,417. This application Jan. 22, 1971, Ser. No. 108,962

Claims priority, application France, Apr. 3, 1967, 101,328; June 23, 1967, 111,808

Int. Cl. C07d *93/10*

U.S. Cl. 260—243 B **9 Claims**

The 2-arylalkyloxy-benzamides of this invention are useful for the production of anesthesia, such as local anesthesia, in mammals. When administered intramuscularly, compounds of this invention show significant anesthesia when compared with xylocaine. Again, intradermic injections of 0.2 ml. of a solution of such a compound in concentrations varying from 0.1 to 1.25 mg./ml. effect suppression of platysma tremor produced by the prick of a pin in guinea pigs. The LD_{50} dosage of the compounds evaluated on mice and rats proved compatible in therapeutic use on mammals.

3,766,179
CYCLIZATION PROCESS

Thomas C. Snapp, Jr., and Alden E. Blood, Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

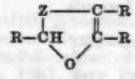
No Drawing. Continuation-in-part of application Ser. No. 787,205, Dec. 26, 1968. This application Feb. 24, 1971, Ser. No. 118,505

The portion of the term of the patent subsequent to July 13, 1988, has been disclaimed

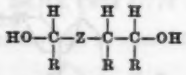
Int. Cl. C07d *87/48, 5/08, 15/12*

U.S. Cl. 260—244 R **20 Claims**

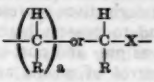
Unsaturated cyclic compounds of the type



are prepared by a process which comprises contacting a mixture of hydrogen, water and a feed stock of the type



in the vapor-phase at elevated temperatures over a catalyst selected from the group consisting of copper, silver, nickel, chromium, palladium, and platinum impregnated on a silica gel containing at least 99% silicon dioxide having a surface area greater than 500 square meters per gram. In the foregoing formulas, Z is the radical



R is H or an alkyl radical containing 1 to 4 carbon atoms; *a* is a number from 1 to 3 and X is either O, S or the radical =N—R. R can be either the same or different at different locations within the molecule. The unsaturated ring product formed by this process, of which p-dioxene is a typical member, are valuable intermediates in the preparation of polymers useful, for example, as viscosity improvers for motor oils and in oxonation and epoxidation reactions to yield cyclic aldehydes and alcohols which are useful for example as plasticizers, surface active agents and adhesives.

3,766,180
3-HETEROCYCLICAMINO-4-CHLORO-1,2,5-THIADIAZOLES

Leonard M. Weinstock, Belle Mead, Roger J. Tull, Metuchen, and Dennis M. Mulvey, Whitehouse Station, N.J., assignors to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Original application Apr. 21, 1969, Ser. No. 818,474, now Patent No. 3,657,237, dated Apr. 18, 1972. Divided and this application Aug. 16, 1971, Ser. No. 172,230

Int. Cl. C07d *87/46*

U.S. Cl. 260—247.1 **5 Claims**

Preparation of S-3-X-4-(3-substituted amino-2-hydroxypropoxy) - 1,2,5 - thiadiazole beta adrenergic blocking agents using as starting material an optically active alkamine in the sinister configuration, or a derivative of said alkamine, which is reacted with a 3-X-4-chloro (or RO— where R is hydrogen or an alkali metal)-1,2,5-thiadiazole. Novel 3-morpholino-4-chloro (or RO—)-1,2,5-thiadiazoles and novel alkamines and their preparation also are described.

3,766,181
ISOCYANURATE ADDITION PRODUCTS WITH LACTONES

John E. Pregler, Wallingford, Conn., assignor to Olin Corporation

No Drawing. Filed Mar. 8, 1972, Ser. No. 232,899

Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS **16 Claims**

Additional products are prepared from substituted isocyanurates and lactones. These addition products are useful in the preparation of urethane coatings.

3,766,182
S-TRIAZINE DERIVATIVES

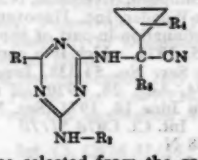
Manfred Kühne, Pfeffingen, Basel-Land, and Christian Vogel, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,170

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 **14 Claims**

Substituted diamino-s-triazine derivatives defined by the following structural formula:



(I)

wherein R_1 is one selected from the group consisting of chlorine, the methoxy, methylthio or ethylthio radical; R_2 is selected from the group consisting of hydrogen, C_1–C_4 alkyl and C_3–C_5 cyclo-alkyl; R_3 is selected from the group consisting of C_1–C_3 alkyl and cyclopropyl; R_4

is selected from the group consisting of hydrogen and the methyl radical.

Diamino-s-triazine derivatives represented by this structure have been found to possess herbicidal activity and are especially useful as pre- and post-emergent herbicides for the selective control of weeds and wild grasses in culture crops such as wheat, sorghum, soya beans, cotton and rice.

3,766,183

SUBSTITUTED 10-PIPERAZINOALKYL ANTHRACENES

Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline Corporation, Philadelphia, Pa.

No Drawing. Application July 3, 1968, Ser. No. 742,171, now Patent No. 3,622,630, dated Nov. 23, 1971, which is a continuation-in-part of abandoned application Ser. No. 631,584, Apr. 18, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 526,975, Feb. 14, 1966. Divided and this application Mar. 5, 1971, Ser. No. 121,544

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 TR **10 Claims**

10 - aminoalkyl - 9,10-dihydroanthracenes wherein the nucleus is substituted by halogen, lower alkyl, trifluoromethyl, lower alkylthio, lower alkylsulfonyl or N,N-dimethylsulfamyl and the amino group may be a monocyclic heterocyclic amino moiety are transquilizers. Corresponding 9-lower alkyl or 9-phenyl derivatives also have utility as antidepressants. Compounds are generally prepared by reaction of a 10-bromoalkyl-anthrocene with an appropriate amine followed by reduction to the 9,10-dihydroanthracene.

9 - substituted - 10-aminoalkyl-9,10-dihydroanthracenes which are not benzo ring substituted have antidepressant activity with no tranquilizing activity. These compounds are generally prepared by alkylation of the 9,10-dihydroanthracene with an aminoalkyl halide.

3,766,184

PROCESS FOR THE CATALYTIC AMINATION OF ALIPHATIC ALCOHOLS, AMINOALCOHOLS AND MIXTURES THEREOF

Jarl Johansson, 15 Vallmovagen, and Jan Tornquist, 2 Vitmossevagen, both of Stenungsund, Sweden

No Drawing. Continuation-in-part of applications Ser. No. 678,551, Oct. 27, 1967, and Ser. No. 75,259, Sept. 24, 1970, both now abandoned. This application Apr. 5, 1971, Ser. No. 131,413

Claims priority, application Sweden, Dec. 30, 1966, 18,030/66

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 SY **13 Claims**

A process is provided for the amination of aliphatic alcohols and aliphatic aminoalcohols and mixtures thereof to aliphatic amines and piperazine and aminoalkyl piperazines, using an amination catalyst composed of iron and nickel and/or cobalt.

3,766,185

N-(N-[CYANOALKYL]-N-NITROSO)AMINO-AMINOALCOHOL ESTERS

William R. J. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 131,431, Apr. 5, 1971, which is a continuation-in-part of applications Ser. No. 51,338, June 30, 1970, and Ser. No. 67,994, Aug. 28, 1970, all now abandoned. This application June 16, 1971, Ser. No. 153,883

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 N **6 Claims**

Organic acid, halogenated organic acid and nitrate esters of N-(N-[cyanoalkyl]-N-nitroso)amino - amino-alcohols, e.g., 4 - (N-[1-cyanoethyl]-N-nitroso)amino-1-piperazine-ethanol nitrate, are useful as anti-anginal agents.

3,766,186

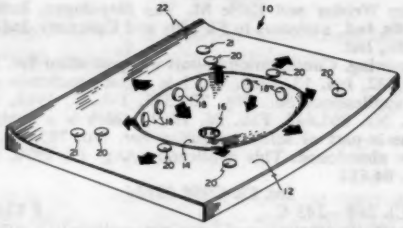
PLASTIC MOLDING PROCESS

Richard L. Mach, Piscataway, Edward Studley, North Plainfield, and Thomas W. Haas, Watchung, N.J., assignors to American Standard Inc., New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,642

Int. Cl. B29c *3/00*

U.S. Cl. 264—269 **7 Claims**



An improved molding process for molding complex surfaces is provided comprising charging a mold cavity with a thermosetting, polymerizable resin, subjecting said resin to pressure and temperature sufficient to mold said resin in conformity with said mold cavity and to partially cure said resin to form a dimensionally stable, partially cured article having complex surfaces, removing at least a portion of the flashing from said molded article, placing discrete masses of a thermosetting, polymerizable resin upon said complex surfaces so that upon application of pressure said resin flows, forming a liquid resin wave front which drives gases and vapors from said mold cavity as said wave front advances with increasing pressure.

3,766,187

3-(1,3-DIALKOXY-, AND 1-HYDROXY-3-ALKOXY-9-OXO - 4-ACRIDANYL)PROPIONATES AS INTERMEDIATES FOR ACRONYCINE AND RELATED COMPOUNDS

James R. Beck, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application July 17, 1967, Ser. No. 653,667, now Patent No. 3,624,087. Divided and this application July 6, 1971, Ser. No. 128,529

Int. Cl. C07d *37/20*

U.S. Cl. 260—279 R **3 Claims**

The total synthesis of acronycine and related compounds from readily available starting materials is described, as are various classes of intermediates useful in the synthesis.

3,766,188

CARBONYLDIOXYMORPHINAN DERIVATIVES

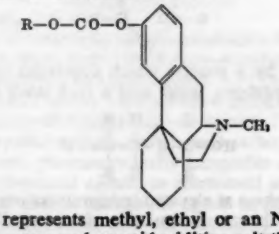
Masuo Murakami and Noriyoshi Inukai, Tokyo, and Noriaki Nagano, Ageo, Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

No Drawing. Filed June 28, 1971, Ser. No. 157,765

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 **5 Claims**

A novel carbonyldioxymorphinan derivative represented by the general formula



wherein R represents methyl, ethyl or an N-methylmorphinan-3-yl group and an acid addition salt thereof. These compounds have an excellent antitussive activity.

3,766,189
FIRE-RETARDANT LATEX CONTAINING CHLORINATED PARAFFIN WAX

Edward A. Blackford, Jr., Coraopolis, Pa., assignor to Sinclair-Koppers Company

No Drawing. Filed Oct. 5, 1972, Ser. No. 295,342
Int. Cl. C08d 7/00; C08f 45/28
U.S. Cl. 260—285 B 5 Claims

A fire retardant polymer composition in latex form has been prepared by adding 5 to 55% by weight based on total monomers of a 30–70% chlorinated paraffin wax and 0.05 to 1.0% by weight based on total monomers of a protective colloid to a monomer mixture comprising 50–90% of an aryl vinyl monomer, 10–50% by weight of a conjugated diolefin, and 0.5–10% by weight of an ethylenically unsaturated carboxylic acid or its amide, and polymerizing the mixture in aqueous acidic emulsion.

3,766,190
PROCESS FOR PREPARING PURE 4-BROMO-3-HYDROXY-QUINOPHTHALONE

Ernst Spietschka, Oberauroff, and Friedrich Ische, Kelkheim, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 854,764, Sept. 2, 1969. This application Mar. 17, 1971, Ser. No. 125,322
Int. Cl. C07d 33/36
U.S. Cl. 260—289 QP 4 Claims

Improved process for the preparation of pure 4-bromo-3-hydroxy-quinophthalone, wherein 3 - hydroxy-quinophthalone is reacted with bromine in sulfuric acid of 96 to 100 percent strength at a temperature between about 0° and 40° C. The product so obtained dyes polyester materials even yellow tints independent of the pH-value of the dyeing medium and without undesired deposits on the material to be dyed. Moreover, the dyestuff is obtained in pure form so that subsequent purification is not necessary.

3,766,191
OXIDATIVE DEHYDROGENATION CATALYST AND PPROCESSES

Robert S. Cichowski, Arroyo Grande, Calif., assignor to Phillips Petroleum Company

No Drawing. Filed Jan. 22, 1971, Ser. No. 109,010
Int. Cl. C07c 5/18
U.S. Cl. 260—290 V 9 Claims

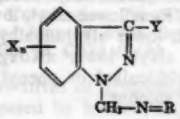
Oxidative dehydrogenation of organic compounds is carried out in the presence of a potassium/iron/phosphorus/oxygen catalyst composition. A method of preparing the catalyst composition comprising associating potassium with iron and subsequently associating the potassium-iron composite with phosphorus.

3,766,192
N-(SUBSTITUTED INDAZOLYL-N¹-METHYL) ALKYLENEIMINES AND THEIR USE AS BIOCIDES

Pasquale Paul Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972, and Ser. No. 141,999, May 10, 1971. This application Nov. 22, 1971, Ser. No. 201,159
Int. Cl. C07d 49/18
U.S. Cl. 260—293.6 11 Claims

Compounds that have the structural formula



wherein X represents halogen, nitro, amino, acetamino, aroylamino, or (halobenzylidene)amino; Y represents hydrogen or halogen; R represents an alkylene group having from 4 to 8 carbon atoms; and *n* represents an integer in the range of zero to 2 can be used to control the growth of microorganisms. Illustrative of these compounds are N-(5-nitroindazolyl-N¹-methyl)hexamethyleneimine and N-(3-chloroindazolyl-N¹-methyl)piperidine.

3,766,193
N-(HETEROCYCLICALKYL)FLUOROALKANE-SULFONAMIDES

Joseph K. Harrington, Edina, and Robert D. Trepka, Woodbury, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Continuation-in-part of application Ser. No. 795,050, Jan. 29, 1969, now Patent No. 3,629,332, dated Dec. 27, 1971. This application June 7, 1971, Ser. No. 150,789
Int. Cl. C07d 31/48
U.S. Cl. 260—294.8 F 4 Claims

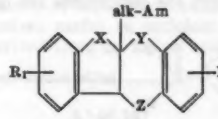
N-(aralkyl)fluoroalkanesulfonamides wherein the alkyl group is substituted by a heterocyclic radical and salts thereof and processes for their preparation are disclosed. These compounds and their compositions are plant growth modifiers, i.e. they modify and/or terminate the growth of plants.

3,766,194
1-AMINOALKYL-DIBENZO-BICYCLOALKANES AND THE SALTS THEREOF

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 812,865, Apr. 2, 1969. This application Mar. 12, 1971, Ser. No. 123,823
Int. Cl. C07c 87/28; C07d 31/36
U.S. Cl. 260—295.5 S 8 Claims

1-aminoalkyl-dibenzobicycloalkanes, e.g. those of the formula



Am=an amino group
alk=alkylene
X=methylene, hydroxy- or alkoxymethylene

one of

Y+Z=X, other direct bond
$R_{1,2}$=H or alkyl,

N-oxides and salts thereof are antidepressants.

3,766,195
POLYCHLORO DERIVATIVES OF DICARBOXY PYRIDINES

Russel M. Bimber, Painesville, and Paul H. Schuldt, Mentor, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

No Drawing. Original application July 9, 1969, Ser. No. 840,484, now Patent No. 3,637,716, dated Jan. 25, 1972. Divided and this application Aug. 9, 1971, Ser. No. 170,282
Int. Cl. C07d 31/36
U.S. Cl. 260—295 R 10 Claims

Novel polychloro derivatives of monocarboxy and dicarboxy pyridines and their amino derivatives, their methods of preparation and utilization as pesticides and intermediates are disclosed.

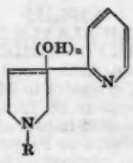
3,766,196

3-(2-PYRIDYL) PYRROLIDINES AND PYRROLINES

William John Welstead, Jr., and Bernard V. Franko, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Filed July 26, 1971, Ser. No. 166,254
Int. Cl. C07d 31/34
U.S. Cl. 260—295 CA 8 Claims

Novel 3-(2-pyridyl) derivatives of pyrrolidines and pyrrolines are described having the formula:



wherein R is hydrogen, lower alkyl, phenyllower-alkyl and lower-alkoxycarbonyl, *n* is one and zero and when *n* is zero the dotted line represents a double bond. The 3-pyrrolidinol compounds are prepared by reacting appropriately substituted pyrrolidinones with 2-pyridyllithium and the pyrroline compounds are prepared by dehydrating the 3-pyrrolidinol compounds. The compounds have local anesthetic activity.

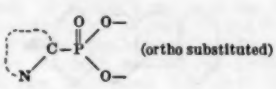
3,766,197

CERTAIN DIHYDROPYRIDINE PHOSPHONATES

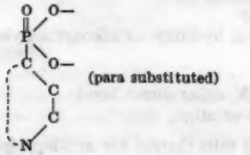
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

No Drawing. Original application May 31, 1968, Ser. No. 733,328. Divided and this application Aug. 6, 1971, Ser. No. 169,851
Int. Cl. C07d 31/28
U.S. Cl. 260—297 P 5 Claims

Nitrogen-heterocyclic phosphonates wherein the phosphonate group is ortho- or para- to the nitrogen heterocyclic group, where the compounds are characterized as follows:

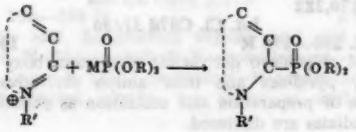


and

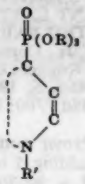


wherein the dotted line represents a cyclic structure which cyclic structure may be the sole cyclic structure, or may be attached to other cyclic groups.

These nitrogen heterocyclic phosphonates are prepared by reacting an aromatic nitrogen heterocyclic compound, wherein the nitrogen atom is in the form of a salt or a quaternary, with a phosphite salt, preferably in the form of esters of the phosphite as exemplified by the following equation:



and/or



These compounds which may be characterized as phosphonates of dihydroaromatic nitrogen heterocycles have many uses including their use as biocides such as bacteriocides, herbicides, corrosion inhibitors, chelating agents, etc.

3,766,198

ONE-STEP METHOD FOR THE PRODUCTION OF TRI(n-BUTYL)LEAD IMIDAZOLE

Evan A. Mayerle, Lake Jackson, Tex., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed May 10, 1972, Ser. No. 251,876
Int. Cl. C07d 49/36
U.S. Cl. 260—299 3 Claims

A one-step method for the production of tri(n-butyl)-lead imidazole which consists of mixing tri(n-butyl)lead acetate, imidazole and sodium hydroxide in a benzene solvent, refluxing 2–4 hours at about 80° C. to remove the formed water of reaction and recovering product from the organic layer.

3,766,199

MANUFACTURE OF 3-BENZIMIDAZOLYL-COUMARINS AS FLUORESCENT COMPOUNDS

Johannes Dehnert, Ludwigshafen, and Gerhard Grau, Limburgerhof, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,453
Claims priority, application Germany, Feb. 10, 1970, P 20 05 968.1; Mar. 11, 1970, P 20 11 500.8
Int. Cl. C07d 49/38
U.S. Cl. 260—299 3 Claims

Manufacture of 3-benzimidazoyl-coumarins comprising the condensation of an o-hydroxybenzaldehyde or o-hydroxynaphthaldehyde with a 2-cyanomethylbenzimidazole in acidic medium. The products are useful as fluorescent dyes.

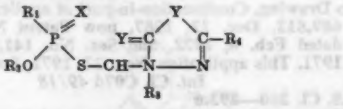
3,766,200

CERTAIN DIAZOLYLALIPHATIC ESTERS OF THIOPHOSPHORIC AND DITHIOPHOSPHORIC ACIDS

Kurt Rüfenacht, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed June 29, 1971, Ser. No. 158,081
Int. Cl. C07d 91/62
U.S. Cl. 260—302 E 37 Claims

New organic phosphorus compounds, process for their production and use in pest control are disclosed. The compounds are thia- or oxadiazolonyl-dithiophosphates of the formula



wherein R_1 represents lower alkyl, lower alkoxy or phenyl, R_2 is lower alkyl, R_3 is lower alkyl, lower halogenoalkyl, lower alkoxyalkyl, lower alkylthioalkyl or phenyl, R_4 is hydrogen, lower alkyl, lower alkoxy, lower alkylthio, alkoxy-alkyl, alkylthioalkyl or phenyl and X, Y and Z each is oxygen or sulphur.

3,766,201

HERBICIDAL DIPHENYL-N-(CHLOROPHENOXY-ACETYL)-THIAZONE IMINES AND A PROCESS FOR THEIR PREPARATION

Elmer F. Litzinger, Louisville, Ky., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Mar. 19, 1969, Ser. No. 808,659, now Patent No. 3,617,248. Divided and this application Mar. 29, 1971, Ser. No. 129,210

Int. Cl. C07d *91/32*

U.S. Cl. 260—306.8 R 5 Claims

2,3-diphenyl-N-(chlorophenoxyacetyl)-thiazone imines are prepared by reacting S-cyanomethylisothiobenzanilide with a di- or tri-chlorophenoxyacetyl chloride, preferably in an inert solvent, to form the hydrochlorides of these N-acyl derivatives. Neutralization of the hydrochlorides gives the free bases. The compounds are useful as herbicides.

3,766,202

1,3-DISUBSTITUTED-5-(SUBSTITUTED THIO) IMINO-2,4-IMIDAZOLIDINE-DIONES AND THE 4-THIO ANALOGS

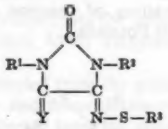
Malcolm Scott Singer, Richmond, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 56,899, July 20, 1970, which is a continuation-in-part of application Ser. No. 852,509, Aug. 22, 1969, now Patent No. 3,655,689, which in turn is a continuation-in-part of abandoned application Ser. No. 745,417, July 17, 1968. This application May 12, 1971, Ser. No. 142,756

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 10 Claims

Compounds of the formula



wherein Y is 0 or S, R^1 and R^2 are individually hydrocarbyl radicals of 1 to 12 carbon atoms optionally substituted with halogens, nitro groups, alkyl groups, or alkoxy groups, and R^3 is alkyl or alkenyl of 1 to 6 carbon atoms optionally substituted with halogen atoms, or aryl of 6 to 12 carbon atoms optionally substituted with halogen atoms, have herbicidal activity.

3,766,203

PROCESS FOR PREPARING IMIDAZOLINE COMPOUNDS

Setsujiro Sumida, Kawasaki, and Tomoyoshi Hachiya, Tokyo, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,747

Claims priority, application Japan, Dec. 30, 1970, 46/128,718; May 31, 1971, 46/37,751

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 10 Claims

Imidazoline compounds are prepared in high yield and in high purity by reacting a 1,2-diamine compound or an N-substituted 1,2-diamine compound with a nitrile compound in the presence of a catalytic amount of cysteine or cystine.

3,766,204

OXYALKYLATED DERIVATIVES OF GLYCOLURILS

Chempolil T. Mathew, Dover Hills, Harry E. Ulmer, Morristown, Edwin D. Little, Convent Station, and Omer E. Curtis, Jr., Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed June 18, 1971, Ser. No. 154,693

Int. Cl. C07d *49/30*

U.S. Cl. 260—309.7 11 Claims

Oxyalkylated derivatives of glycoluril and substituted glycolurils are prepared by hydroxyalkylation with 1,2-epoxides in the presence of a suitable catalyst. The compounds are useful to prepare polyesters, alkyd resins, and polyurethanes and as lubricants and surface active agents.

3,766,205

UV-ABSORBING HYDROXYPHENYL-BENZOTRIAZOLES

Hansjörg Heller, Riehen, Jean Rody, Basel, and Ernst Keller, Binningen, Basel-Land, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 544,834, Apr. 25, 1966, which is a continuation-in-part of abandoned applications Ser. Nos. 202,664, 202,665, 202,666, 202,667 and 202,668, all filed June 15, 1962, Ser. No. 328,480, Dec. 6, 1963, and Ser. No. 535,740, Mar. 21, 1966. This application Dec. 11, 1969, Ser. No. 884,364

Claims priority, application Switzerland, June 16, 1961, 7,099/61

Int. Cl. C07d *55/04*

U.S. Cl. 260—308 B 7 Claims

Light-stabilizers for polymeric light-sensitive products and materials are provided which pertain to the class of 2-(2' - hydroxyphenyl)-benzotriazoles. Compositions of the compounds and the light-sensitive materials are also provided. In further aspects of the invention light-stable poly addition compounds are provided which contain the 2-(2'-hydroxyphenyl)-benzotriazole compounds as an integral part of the poly addition compounds. Light-stable linear polycarbonamides and light-stable high molecular weight polyester materials are also provided.

3,766,206

18β-GLYCYRRHETINIC ACID AMIDES USEFUL AS ANTIULCER AGENTS

Hans-Jurgen E. Hess, Old Lyme, and Roger P. Nelson, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 3, 1971, Ser. No. 195,475

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 6 Claims

Amide derivatives of 18β-glycyrrhetinic acid and its 3-alkanoyl derivatives useful as antiulcer agents wherein the amide is derived from an amino acid.

3,766,207

1,1-DIALKYL-2-(SUBSTITUTED INDAZOLYL-N¹-METHYL)HYDRAZINES

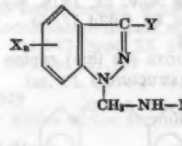
Pasquale Paul Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of application Ser. No. 141,999, May 10, 1971. This application Nov. 22, 1971, Ser. No. 201,166

Int. Cl. C07d *49/18*

U.S. Cl. 260—310 C 10 Claims

Compounds that have the structural formula



wherein X represents halogen, nitro, amino, acetamino, aroylamino, or (halobenzylidene)amino; Y represents hydrogen or halogen; each R represents a lower alkyl group; and *n* represents an integer in the range of zero to 2 are used to control the growth of bacteria, fungi, and other microorganisms. Illustrative of these compounds is 1,1 - dimethyl-2-(5,6-dinitroindazolyl-N¹-methyl)hydrazine.

3,766,208
CERTAIN GERANYL ETHERS

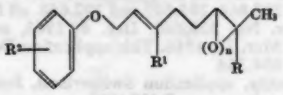
Hwalin Lee, San Francisco, Ferenc M. Pallos, Pleasant Hill, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Mar. 29, 1971, Ser. No. 129,192, now Patent No. 3,701,759, which is a continuation-in-part of application Ser. No. 856,140, Sept. 8, 1969, which in turn is a continuation-in-part of application Ser. No. 815,229, Apr. 10, 1969, both now abandoned. Divided and this application Aug. 21, 1972, Ser. No. 282,647

Int. Cl. A61k *27/00*; **C07d** *13/04, 71/00*

U.S. Cl. 260—327 M **1 Claim**

Compounds having the formula



in which R and R^1 are independently methyl or ethyl; *n* is the integer zero to one; R^2 is certain heterocyclic radicals; the use of these compounds in controlling insects.

3,766,209
METHOD FOR THE PREPARATION OF JUVENILE HORMONE MIMICS

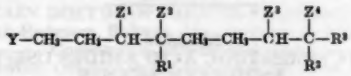
Thomas L. Emmick, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Oct. 8, 1971, Ser. No. 187,891

Int. Cl. C07d *73/00*

U.S. Cl. 260—327 M **4 Claims**

Juvenile hormone mimics having the formula



wherein

Y is furyl, thienyl, naphthyl, phenyl or substituted phenyl; R^1, R^2 and R^3 are each C_1–C_3 alkyl; and

Z^1, Z^2, Z^3 and Z^4 separately are each hydrogen or Z^1 and Z^2 together and Z^3 and Z^4 together are a carbon to carbon bond,

are prepared from aldehydes having the formula

Y—CHO

by a three step process involving the preparation of a dithiane from the aldehyde, reaction of the dithiane with an organic halide and removal of the dithiane ring by reduction. Novel substituted dithianes are obtained as intermediates in the process.

3,766,210
5,11-DIHYDRODIBENZOXA (OR THIA) ZEPINE DERIVATIVES

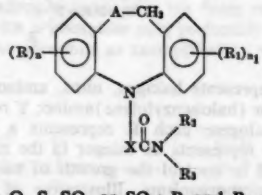
Harry Louis Yale and Ramesh B. Petigara, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,329

Int. Cl. C07d *51/70*

U.S. Cl. 260—333 R **5 Claims**

5,11-dihydrodibenzoxa (or thia) zepine derivatives are provided having the structure



wherein A is O, S, SO, or SO_2; R and R_1 are the same or different and can be halogen, trifluoromethyl, lower alkyl, cycloalkyl, lower alkylmercapto, lower alkyloxy, cyano or di-lower alkylsulfamoyl; X is an alkylene radical; R_2 and R_3 may be the same or different and are hydrogen, lower alkyl, substituted or unsubstituted aminoalkylene of the formula

wherein R'_2 and R'_3 can include any of the R_2 and R_3 radicals and X′ can include any of the X groups, monocyclic cycloalkyl, monocyclic cycloalkyl-lower alkyl, hydroxy-lower alkyl, monocyclic aryl, monocyclic aryl-lower alkyl, or monocyclic heterocyclic alkyl, or R_2 and R_3 may form a heterocyclic radical along with the nitrogen to which they are attached; *n* is 0, 1 or 2; and *n′* is 0, 1, or 2. These compounds are useful in lowering blood pressure and as anti-inflammatory agents.

3,766,211
EPOXIDIZED HYDROAROMATIC ACETALS

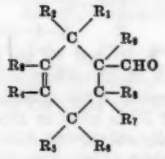
Hans Batzer, Arlesheim, Erwin Nikles, Liestal, Otto Ernst, Pfeffingen, and Daniel Porret, Binningen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original applications July 21, 1959, Ser. No. 828,472, and May 21, 1970, Ser. No. 39,524. Divided and this application Mar. 9, 1972, Ser. No. 233,297

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 **1 Claim**

Epoxidized derivatives of reaction products of aldehydes of the General Formula I:



with dialcohols having at least one epoxidizable C=C double bond. The products are useful for preparing epoxy resins.

3,766,212
PROCESS FOR THE PREPARATION OF ε-CAPROLACTONE

Helmut Waldmann, Leverkusen, Wulf Scherdtel, Cologne, and Wolfgang Swodenk, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 29, 1971, Ser. No. 167,395

Claims priority, application Germany, Aug. 1, 1970, P 20 38 455.8

Int. Cl. C07d *9/00*

U.S. Cl. 260—343 **29 Claims**

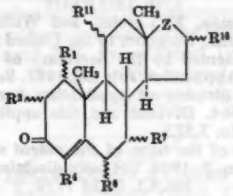
ε-Caprolactone is prepared by oxidizing cyclohexanol, hydrolyzing the cyclohexanone peroxide formed to hydrogen peroxide and cyclohexanone and extracting the hydrogen peroxide with water in a first stage; mixing the aqueous hydrogen peroxide solution from the first stage with one or more organic phosphorus compounds in a second stage; removing water from the second stage reaction mixture and reacting same with an aliphatic fatty acid, again removing water to form a percarboxylic acid solution which is reacted with the cyclohexanone formed in the first stage to produce ε-caprolactone.

3,766,213
RETROSTEROID A-RING FORMATION

Andor Furst, Basel, and Wolfgang Koch, Riehen, Switzerland, and Milan Radoje Uskokovic, Upper Montclair, N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

No Drawing. Original application Apr. 19, 1966, Ser. No. 543,526, now Patent No. 3,591,607. Divided and this application Jan. 6, 1971, Ser. No. 104,470
Int. Cl. C07d 7/26
U.S. Cl. 260—343.2 S 5 Claims

A process for producing known retrosteroids of the formula:



wherein:

R^1 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and lower alkylthio;
R^2 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, and lower alkylthio;
R^6 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio, and halo;
R^7 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio, and halo;
R^{11} is a member selected from the group consisting of hydrogen, hydroxy and lower alkanoyloxy;
R^{16} is a member selected from the group consisting of hydrogen, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, and, when the 17β-substituent is acetyl or substituted acetyl, fluorine;
Z is a member selected from the group consisting of carbonyl, (17β-hydroxy-17α-lower alkanoic acid lactone), and

$R^{17\beta}$ is a member selected from the group consisting of hydroxy, lower alkanoyloxy, and

Y is a member selected from the group consisting of hydrogen, halo, and hydroxy;
$R^{17\alpha}$, when $R^{17\beta}$ is hydroxy and lower alkanoyloxy, is a member selected from the group consisting of hydrogen and lower aliphatic hydrocarbyl, and when R17$^{\beta}$ is

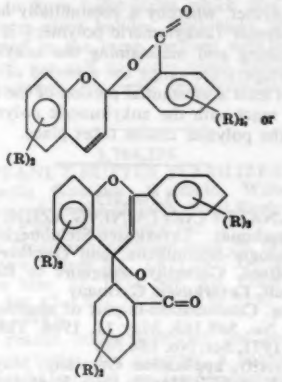
is a member selected from the group consisting of hydrogen alkyl, hydroxy, lower alkanoyloxy, and halo;
Q when taken alone, is oxo;
T^1 when taken alone, is a member selected from the group consisting of alkali metal oxy and lower alkoxy; and
T^1 and Q, when taken together are nitrolo.

3,766,214
BENZOPYRAN COMPOUNDS

Chao-Han Lin and Arthur J. Wright, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Mar. 31, 1972, Ser. No. 240,114
Int. Cl. C07d 5/06, 5/32
U.S. Cl. 260—343.3 12 Claims

Colorless, but colorable benzopyran compounds are disclosed, which are represented by the formula:



wherein each R is hydrogen, an alkyl radical having 1 to 5 carbon atoms, an alkoxy radical having 1 to 5 carbon atoms, a dialkylamino radical wherein each alkyl radical has 1 to 5 carbon atoms, an amino radical, a nitro radical or acetamido. These compounds are used in pressure-sensitive record material and in mark-forming manifold systems.

3,766,215
PROCESS FOR THE PREPARATION OF ADDUCTS FROM MALEIC ANHYDRIDE AND LIQUID, LOW-MOLECULAR WEIGHT POLYBUTADIENES

Karl-Dieter Hesse, Marl, and Klaus Gorke, Hullern, Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,924
Claims priority, application Germany, Mar. 19, 1970, P 20 13 096.5
Int. Cl. C07c 57/02; C08f 17/00
U.S. Cl. 260—346.8 10 Claims

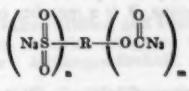
Adducts of liquid polybutadienes and maleic anhydride of a viscosity and color suitable for the production of synthetic varnishes are produced by conducting the reaction in the presence of a chelating agent, e.g., ethylenediaminetetraacetic acid or the disodium salt thereof.

3,766,216
AZIDES

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 761,847, Sept. 23, 1968. This application June 8, 1971, Ser. No. 151,157
Int. Cl. C07c 117/00
U.S. Cl. 260—349 6 Claims

Disclosed are azides of the formula



wherein R is a polyvalent organic radical, and n and m are each 1–10. They are useful for bonding receptive polymers to ethylenically unsaturated hydrocarbon silane treated glass and, particularly when $m=1$, for linking together the polymer chains of receptive polymers. Be-

cause in the reaction of these compounds with receptive polymers the azidoformate radicals react substantially faster than the azidosulfonyl radicals, linking of receptive polymers with these compounds can be effected in two steps. (1) After forming a blend of receptive polymer and azide of the formula, establishing and maintaining the blend in a temperature range for a period of time selected to permit at least a substantial portion of the azidoformate radicals to react with the polymer with a minimum of the azidosulfonyl radicals having reacted with the polymer, whereby a substantially nonlinked, but reacted, polymer (ankylomeric polymer) is formed, and (2) establishing and maintaining the ankylomeric polymer in a temperature range for a period of time selected to permit at least a substantial portion of the azidosulfonyl radicals to react with the ankylomeric polymer, whereby linking of the polymer chains takes place.

3,766,217

ISOCYANATES CONTAINING AZIDE GROUPS

Hans Holtschmidt, Leverkusen-Steinbuechel, Heinrich Gold, Cologne-Stammheim, and Gunther Oertel, Cologne-Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 549,163, May 11, 1966. This application June 18, 1971, Ser. No. 154,700

Claims priority, application Germany, May 14, 1965, F 46,057; Mar. 9, 1966, F 48,615

Int. Cl. C07c *117/00*

U.S. Cl. 260—349 **6 Claims**

Isocyanates containing azide groups where the azide is bonded to a hydrocarbon organic radical or hydrocarbon organic radical interrupted by acyl, ether or thioether groups and the isocyanate group is bonded directly to a carbon atom. A process for the preparation of these isocyanates which involves the phosgenation of the corresponding amines is also disclosed. The isocyanate-containing azide groups are intended to be used in preparation of light sensitive polymers and as intermediate products for the preparation of pesticides and pharmaceuticals.

3,766,218

NOVEL SUBSTITUTED CHRYSANTHEMATES

Kenzo Ueda, Nishinomiya, Toshio Mizutani, Hirakata, Nobushige Itaya, Minoo, and Yositosi Okuno, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

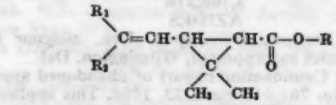
No Drawing. Filed Feb. 23, 1971, Ser. No. 118,194

Claims priority, application Japan, Feb. 26, 1970, 45/16,805; Mar. 2, 1970, 45/18,115; Dec. 17, 1970, 45/114,364

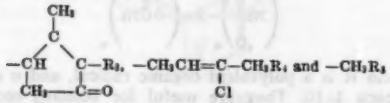
Int. Cl. C07c *69/00*

U.S. Cl. 260—347.4 **6 Claims**

A compound of the formula,



wherein R_1 is a methyl, R_2 is a C_1–C_5 alkoxymethyl, a C_3–C_5 alkenoxymethyl, a C_3–C_5 alkynoxymethyl, a C_1–C_5 alkylcarboxyl, a C_2–C_5 alkenylcarbonyl or a C_2–C_5 alkynylcarbonyl, or R_1 and R_2 are bonded at respective ends to form cyclic ketone, R is a member of



wherein R_3 is a C_3–C_5 alkenyl, a C_3–C_5 alkynyl or C_3 alkadienyl, R_4 is a substituted or unsubstituted phenyl, thienyl or furyl (the substituent being methyl, methoxy or a halogen), and R_5 is a substituted phenyl, thienyl or furyl (the substituent being a C_1–C_3 alkyl, a C_3–C_5 alkenyl, C_5 alkadienyl, a C_3–C_5 alkynyl, a halogen, benzyl, thenyl, furylmethyl, phenoxy, phenylthio or a polymethylene containing or not containing oxygen in the carbon chain having 3–4 carbon atoms), or phthalimido, thiophthalimido, di- or tetrahydrophthalimido or a substituted maleimido (the substituent being one or two C_1–C_4 alkyls or phenyls), which is useful as an active ingredient of insecticides.

3,766,219

FLUORINATED GLYCIDYL ETHERS AND USE THEREOF

Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Application July 26, 1967, Ser. No. 666,530, which is a division of application Ser. No. 421,128, Dec. 24, 1964. Divided and this application Jan. 16, 1970, Ser. No. 3,513

The portion of the term of the patent subsequent to Jan. 2, 1985, has been disclaimed

Int. Cl. C07d *1/18*

U.S. Cl. 260—348 R **3 Claims**

Fluoroalkyl glycidyl ethers are prepared by reacting a fluoroketone with an alkali metal fluoride, then reacting the resulting intermediate with an epihalohydrin. Typically, the ketone is hexafluoroacetone whereby the end product is heptafluoroisopropyl glycidyl ether. The glycidyl ethers are useful, in monomeric and especially polymeric form, for imparting water- and oil-repellency to textiles.

3,766,220

EPOXIDIZED ESTERS OF 5-OXAALKENOIC ACIDS

Vaclav Jarolim, Lyckovon. 9, Prague-Karlin, Czechoslovakia; and Karel Slama, 674 Na cervenem vrchu; and Frantisek Sorm, 9 Korejska, both of 6 Prague, Czechoslovakia

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,813

Int. Cl. C07d *1/22*

U.S. Cl. 260—348 A **4 Claims**

Novel esters of 5-oxa-alkenoic acids possessing insect juvenile hormone activity prepared from an oxa-ketone by Wittig reaction, Emmons-Wadworth reaction or Reformatsky reaction followed by dehydration.

In recent time, a number of substances has been discovered possessing the juvenile hormone activity, namely, stimulating the insect larval development, interfering with the metamorphosis of larvae, and influencing the ovarian growth in adult females. Majority of these compounds possess a farnesane or bisabolane skeleton, e.g., farnesol, 10,11-epoxyfarnesoic acid methyl ester, esters of dihydrodichlorofarnesoic acid, juvabione, dehydrojuvabione, and derivatives of p-(1,5-dimethylhexyl) benzoic acid.

3,766,221

PROCESS FOR THE MANUFACTURE OF GLYCIDYL ETHERS

Wilhelm Becker, Hamburg, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,715

Claims priority, application Switzerland, Mar. 16, 1970, 3,866/70

Int. Cl. C07d *1/18*

U.S. Cl. 260—348.6 **14 Claims**

The present invention relates to a process for the manufacture of glycidyl ethers of monohydric or polyhydric phenols by reaction of a monohydric or polyhydric phenol with excess epichlorohydrin in an alkaline medium, in which a monohydric or polyhydric phenol is reacted with excess epichlorohydrin, relative to the phenolic hydroxyl group, in the presence of about one equivalent of alkali hydroxide per equivalent of phenolic hydroxyl

group, characterized in that 3 to 15 mols epichlorohydrin per mol phenolic hydroxyl group are reacted.

3,766,222

MANUFACTURE OF 1-NITROANTHRAQUINONE

Ernst Hartwig, Heidelberg, Otto Ackermann, Otterstadt, and Heinz Eilingsfeld, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Aug. 9, 1971, Ser. No. 170,222
Claims priority, application Germany, Aug. 11, 1970, P 20 38 822.5
Int. Cl. C09b *1/00*
U.S. Cl. 260—369 4 Claims

Process for making 1-nitroanthraquinone in high yields by nitrating anthraquinone in heterogeneous phase in 70–90% w./w. sulfuric acid and in the temperature range 20° to 60° C. until 75% by weight of 1-nitroanthraquinone has formed. Washing of the isolated nitration product with carboxamides produces very pure 1-nitroanthraquinone.

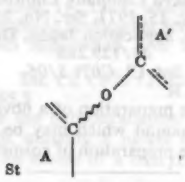
3,766,223

DISTEROIDYL ETHERS

Alberto Ercoli, Milan, Rinaldo Gardi, Carate Brianza, and Romano Vitali, Casatenovo, Italy, assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Mar. 30, 1972, Ser. No. 239,788
Claims priority, application Italy, Apr. 6, 1971, 22,762/71
Int. Cl. C07c *169/10, 169/22, 169/34*
U.S. Cl. 260—397.1 32 Claims

Biologically active disteroidyl ethers wherein two steroid nuclei are joined together by an oxygen bridge between the carbon atoms in the 3-position of both nuclei, having the following partial structure, are disclosed:



wherein the wavy line indicates that the oxygen atom linked in position 3 to the A ring may assume the α or β configuration, and the broken line indicates an optional double bond in position 3 for the steriod St and a double bond in position 2' or 3' for the steroid St'; St is a steriod residue belonging to the cholane, cholestane, estrane, androstane and pregnane series, and their 18-homo and 19-nor derivatives; St' is a steroid residue belonging to the androstane and pregnane series and their 18-homo and 19-nor derivatives. These new disteroidyl ethers of the invention are prepared by submitting a 3-hydroxy derivative of a steroid of the cholane, cholestane, estrane, androstane, or pregnane series, as well as their 18-homo and 19-nor derivatives, to trans-etherification with an activated derivative of a 3-ketosteroid of the androstane, or pregnane series, as well as of their 18-homo and 19-nor derivatives, under anhydrous conditions and in the presence of an acid catalyst.

3,766,224

15-METHYL-SUBSTITUTED STEROIDS

Robert V. Coombs, Chatham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed June 3, 1971, Ser. No. 149,748
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 4 Claims

The compounds are 13-(lower)alkyl-15-methylgonenes which have 1,3,5(10); 4- or 5(10)-unsaturation, e.g. 17α-ethynyl-15-methylestra-4-en-17β-ol - 3 - one, which compounds are useful as therapeutic agents.

3,766,225

NOVEL PROCESS FOR PREPARING STEROID HALOHYDRINS AND VINYL HALIDES

Howard E. Harris, Bloomfield, and Carl J. Miskowicz, Garwood, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,781
Int. Cl. C07c *169/30*
U.S. Cl. 260—397.4 8 Claims

Steroidal epoxides react with certain carbinoliminium halide salts in a medium containing at least one equivalent of such salt to form halohydrins which may be further reacted to form vinyl halides. Optionally, the epoxides may be reacted in the same medium with at least two equivalents of the salt to form vinyl halides directly. Reaction conditions for such transformations are described.

3,766,226

PEANUT BUTTER STABILIZER

Chester Martin Gooding, Westfield, Wilbur Parker, Somerville, and Daniel Melnick, West Englewood, N.J., assignors to CPC International Inc.

No Drawing. Original application June 30, 1969, Ser. No. 837,862, now Patent No. 3,671,267. Divided and this application Mar. 27, 1972, Ser. No. 238,678
Int. Cl. C07c *53/00;* C11b *5/00*
U.S. Cl. 260—398.5 16 Claims

A novel peanut butter stabilizer for providing improved peanut butter, for example, a peanut butter of improved mouth feel and low temperature spreadability, stabilized aginst oil separation at temperatures up to about 100° F. with from about 0.5% to about 2.3% of a symmetrical monounsaturated disaturated glyceride, from about 0.35% to about 1.3% of a trisaturated glyceride, and no more than about 2% total of a diunsaturated monosaturated glyceride and/or unsymmetrical monosaturated disaturated glyceride, the percentage figures being percent by weight.

3,766,227

HYDROLYSIS-RESISTANT ACETOGLYCERIDES WHICH ARE SOLID AT ROOM TEMPERATURE

Heinrich Bünger, Witten-Bommern, and Gustav Renckhoff, Witten (Ruhr), Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Filed Mar. 24, 1971, Ser. No. 127,809
Claims priority, application Germany, Mar. 28, 1970, P 20 15 085.0
Int. Cl. C07c *69/30;* C11c *3/00*
U.S. Cl. 260—410.8 8 Claims

Completely odorless acetoglycerides, solid at room temperature and having an extraordinary resistance to hydrolysis, are prepared by acetylating partial glycerides of fatty acids having 16 and/or 18 carbon atoms, the partial glycerides having an iodine number of below 5 and a monoglyceride content of more than 70% by weight, to a hydroxyl number of at most 30, distilling off the acetic acid and excess acetic anhydride as completely as possible, and deodorizing the reaction mixture at a temperature of greater than 170° C. under a vacuum, with an inert gas or vapor being passed therethrough.

3,766,228

PROCESS FOR THE PRODUCTION OF A STRAIGHT-CHAIN ALIPHATIC-ALPHA-HYDROXYCARBOXYLIC ACID

Gerhard Stern, Walter Müller, and Ferdinand Weinrotter, Linz (Danube), Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz (Danube), Austria

No Drawing. Filed Aug. 31, 1971, Ser. No. 176,702
Int. Cl. C08h *17/36*
U.S. Cl. 260—413 7 Claims

The preparation of straight-chain, aliphatic α-hydroxycarboxylic acids by the saponification of α-nitratocarbox-

ylic acids which comprises carrying out the saponification of the α-nitratocarboxylic acid with a neutral aqueous solution of an alkali metal salt of the α-nitratocarboxylic acid, produced by simultaneous introduction of the acid and of the alkali into previously introduced water, and the addition of alkali during saponification is so controlled that only after the bulk of the acid is saponified is the pH value of 9 exceeded.

3,766,229

DRILLING FLUIDS

Finis Turner and Jang-Woo Nahm, Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

No Drawing. Continuation of abandoned application Ser. No. 867,365, Oct. 17, 1969. This application Aug. 19, 1971, Ser. No. 173,270

Int. Cl. C07f 13/00; C07g 17/00

U.S. Cl. 260—429 K 1 Claim

A drilling fluid dispersing agent and fluid loss control agent composed of salts of at least one of sulfonated lignite and sulfonated humic acid. A drilling fluid containing the dispersing and/or fluid loss control agent. A process for drilling, completing, or working over a well wherein a drilling fluid according to this invention is employed.

3,766,230

AZOMETHINE COMPLEX PIGMENTS

Eric Richard Inman, Bridge of Weir, Ian Alexander MacPherson, Paisley, and John Andrew Stirling, Glasgow, Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland

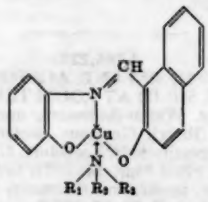
No Drawing. Filed July 2, 1971, Ser. No. 159,457

Claims priority, application Great Britain, July 3, 1970, 32,308/70; Jan. 15, 1971, 2,024/71

Int. Cl. C07f 1/08

U.S. Cl. 260—438.1 12 Claims

Pigments of the formula



wherein R_1 and R_2 are the same or different and each is hydrogen or an alkyl radical having from 1 to 22 carbon atoms and R_3 is an alkyl radical having from 1 to 22 carbon atoms, the alkyl radicals in R_1, R_2 and R_3 being unsubstituted and uninterrupted or being terminated by an OH, NH_2 or CN group or being interrupted by an ethylenic or an oxygen-, sulphur- or nitrogen-containing group, are useful for coloring polymeric materials in fast yellow shades.

3,766,231

COMPOUNDS OF ZERO-VALENT NICKEL CONTAINING N-BONDED NITRILES

Lawrence Wayne Gosser and Chadwick Alma Tolman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 2, 1971, Ser. No. 168,353

Int. Cl. C07f 15/04

U.S. Cl. 260—439 R 3 Claims

An N-bonded nitrile complex of zero-valent nickel having the formula $Ni(PXYZ)_3R'CN$ wherein X is OR, Y and Z are R or OR and R is an alkyl or aryl radical having up to 18 carbon atoms, a given PXYZ ligand having a cone angle with an average value between 130° and 200°, and R' is an alkyl, cyano substituted alkyl, alkenyl, aryl or fluorine substituted aryl radical of 1 to 20 carbon atoms. The compounds are useful in the hydrocyanation of olefinic compounds.

3,766,232

ORGANO-METALLIC PEROXIDIC DERIVATIVES OF MOLYBDENUM AND TUNGSTEN AND THEIR PROCESS OF MANUFACTURE AND USE

Hubert Mimoun, Paris, Irenee Seree de Roch, Rueil-Malmaison, Lucien Sajus, Croissy-sur-Seine, and Pierre Menguy, L'Etang-la-Ville, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

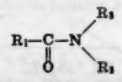
No Drawing. Original application Feb. 2, 1968, Ser. No. 702,536, now Patent No. 3,597,459. Divided and this application Mar. 16, 1971, Ser. No. 124,969

Claims priority, application France, Feb. 7, 1967, 94,063

Int. Cl. C07f 11/00

U.S. Cl. 260—439 11 Claims

Compounds of the formula $H_2MO_6 \cdot nA$ wherein M is tungsten or molybdenum, n is 1 or 2 and A is a carboxylic amide of the formula



wherein R_1 is hydrogen or a monovalent hydrocarbon radical and R_2 and R_3 are monovalent hydrocarbon radicals or are combined together to form a ring with the adjacent nitrogen atom. They are useful as epoxidation agents for olefinic double bonds, either as reactants per se or in small amounts as catalysts used together with hydroperoxides or hydrogen peroxide or with oxygen in combination with a 9,10-dihydroxyanthracene.

3,766,233

ANTIPERSPIRANTS

Kazuhiro Tsukada, Tokyo, Japan, assignor to Sankyo Company Limited

Filed Dec. 15, 1971, Ser. No. 208,099

Claims priority, application Japan, Dec. 24, 1970, 45/129,288

Int. Cl. C07f 5/06

U.S. Cl. 260—448 R 7 Claims

A process for the preparation of a novel aluminium hydroxychloride compound which may be used as antiperspirants used for the preparation of cosmetics.

3,766,234

METHOD FOR MAKING ALKYLALUMINUM COMPOUNDS

Warren B. Kirsch, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 16, 1970, Ser. No. 98,646

Int. Cl. C07f 5/06

U.S. Cl. 260—448 A 5 Claims

A method of preparing alkylaluminum compounds by reacting aluminum or aluminum alloy with an alkylaluminum compound and hydrogen or a mixture of an alkylaluminum compound, hydrogen and olefin, in the presence of a catalytic or activating amount of a complex alkali metal or alkaline earth metal compound.

3,766,235

HYDROXAMIC ACID DERIVATIVES OF ALPHA-AMINOOXY-CARBOXYLIC ACIDS

Lajos Kisfaludy, Agnes Patthy, nee Lukats, Lajos Dancsi, Gyorgy Fekete, and Istvan Szabo, Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

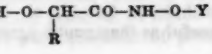
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,099

Claims priority, application Hungary, Dec. 29, 1969, RI-384

Int. Cl. C07c 119/00

U.S. Cl. 260—453 R 2 Claims

α-Aminooxy-alkyl carbonyl hydroxamic acid derivatives having tuberculostatic activity and corresponding to the general formula



(I)

wherein

X represents a hydrogen atom or an acyl group,
R represents a hydrogen atom or an unsubstituted or substituted alkyl-, aralkyl or aryl radical,
Y represents an unsubstituted or substituted C_{1-15} alkyl, aralkyl or aryl group or a heterocyclic radical,

as well as the pharmaceutically acceptable acid addition salts thereof.

3,766,236
SYNTHESIS OF HALOTHIOLFORMATES

Warren A. Thaler, Matawan, N.J., and Wolfgang H. Mueller, Neuallschwil, Switzerland, assignors to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 696,147, Jan. 8, 1968. This application Nov. 27, 1970, Ser. No. 93,480
Int. Cl. C07c *154/00*
U.S. Cl. 260—455 R **10 Claims**

Halothiolformates are prepared by reacting a sulfenyl halide with carbon monoxide under moderate conditions of temperature and pressure, the products being useful as pesticides and as intermediates for the preparation of carbamate pesticides; reactivity of the sulfenyl halide may be enhanced by heat, polar solvents, and/or Lewis acid catalysts.

3,766,237
HYDROCYANATION OF OLEFINS

Yuan-tsan Chia and William Charles Drinkard, Jr., Wilmington, Del., and Edward Noonan Squire, Glen Mills, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 832,435, June 11, 1969, which is a continuation-in-part of abandoned application Ser. No. 667,087, Sept. 12, 1967. This application Jan. 25, 1972, Ser. No. 220,707
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.3 **18 Claims**

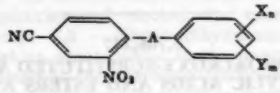
A process for the hydrocyanation of selected unsaturated compounds utilizing a nickel complex catalyst in the presence of an excess of a triaryl phosphite.

3,766,238
3-NITRO-4-PHENOXY BENZONITRILES

Otto Rohr, Therwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of abandoned application Ser. No. 697,327, Jan. 12, 1968. This application Nov. 19, 1970, Ser. No. 91,172
Claims priority, application Switzerland, Jan. 20, 1967, 886/67
Int. Cl. C07c *121/74*
U.S. Cl. 260—465 F **1 Claim**

The present invention relates to compounds of the general formula



in which X represents a halogen atom, a lower alkyl radical containing 1 to 4 carbon atoms or one of the groups $—OCH_3$, $—SCH_3$, —CN, $—NO_2$ or $—CF_3$, Y represents a halogen atom or a lower alkyl radical containing 1 to 4 carbon atoms, *m* and *n* each represents 0, 1, 2 or 3, and A represents an oxygen or a sulphur atom, as well as to preparations for combating phytopathogenic nematodes containing, as active ingredient, a compound as defined above, together with a suitable carrier.

3,766,239
AMMOXIDATION OF CHLOROMETHYL COMPOUNDS

Yves Colleuille and Robert Perron, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,182
Claims priority, application France, Dec. 30, 1969, 45,468; Oct. 30, 1970, 39,201
Int. Cl. C07c *121/02*
U.S. Cl. 260—465 R **9 Claims**

Nitriles of formula YCN where Y is alkylphenyl or alkenyl of formula

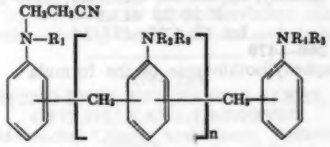
where R_1, R_2 and R_3 are hydrogen or alkyl, at least one being methyl, are obtained by vapour phase ammoxidation using oxygen and ammonia in the presence, as catalyst, of at least one element of Groups I–B, III–A, III–B, IV–A, IV–B, V–A, V–B or VI–B of the Periodic Table or of iron or of at least one derivative thereof.

3,766,240
N-(CYANOETHYL)POLYOLS OF METHYLENE-DIANILINES

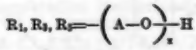
Adhan A. R. Sayigh, North Haven, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,576
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E **7 Claims**

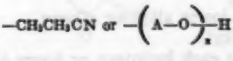
Polyols are described having the formula:



wherein



where A is the alkylene residue of a vicinal alkylene oxide of from 2 to 4 carbon atoms and *x* is an integer from 1 to 20; and wherein R_2 and R_4 are



and *n* is an integer from 0 to 4. The above polyols are obtained by alkoxylation of the corresponding mono- or poly-N-cyanoethyl derivatives of the appropriate methylene bridged polyphenyl polyamines. The above polyols and blends thereof with supplementary polyols of functionality 2 to 6 and hydroxyl equivalent weights of 30 to 200, are useful in preparing polyurethane foams.

3,766,241
REMOVAL OF METAL CATIONS FROM SOLUTION IN NITRILES

William Charles Drinkard, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 26, 1971, Ser. No. 147,212
Int. Cl. C07c *121/04*
U.S. Cl. 260—465.8 R **6 Claims**

The invention comprises a method for removing metal cations from solution in nitriles by contacting such solu-

tions with anhydrous ammonia. The method is particularly useful for purification of product streams in the hydrocyanation of olefins to produce nitriles.

3,766,242

FLAME RETARDANT AND INTUMESCENT COMPOSITIONS

Erich Kuehn, Wilmington, Del., assignor to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Original application May 3, 1968, Ser. No. 726,538, now Patent No. 3,639,535. Divided and this application Jan. 5, 1971, Ser. No. 104,133

Int. Cl. C07c *69/74*

U.S. Cl. 260—468 G 2 Claims

Novel adjuvants and combinations thereof are provided which have the properties of importing flame-retardancy and intumescence to polymeric materials. The new adjuvants comprise halogenated and phosphorus-containing adjuvants of diallyl chlorendate and mineral acid salts of phenylbiguanidine derivatives. The latter may be advantageously combined with a wide variety of phosphorus-containing compounds, including especially, novel diallyl chlorendate derivatives to provide intumescent films and coatings.

3,766,243

UREIDOPHENYLISOTHIOUREAS

Arno Widdig, Blecher, Engelbert Kuhle, Bergedorf-Gladbach, Hans Scheinpflug, Leverkusen, Ferdinand Grewe, Burscheid, and Helmut Kaspers and Paul Ernst Frohberger, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

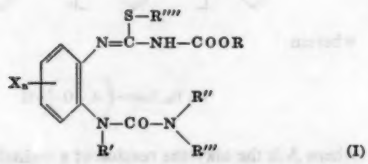
No Drawing. Filed May 10, 1971, Ser. No. 141,977

Claims priority, application Germany, May 25, 1970, P 20 25 413.1

Int. Cl. C07c *157/14*

U.S. Cl. 260—470 4 Claims

Ureidophenylisothioureas of the formula



(I)

in which

n is 0, 1 or 2,

X is halogen, lower alkyl or alkoxy,

R is lower alkyl,

R′ and R″ are each hydrogen or lower alkyl,

R‴ is hydrogen; alkyl with 1 to 18 carbon atoms optionally substituted by halogen, nitrile, lower alkoxy or lower alkoxycarbonyl; cycloalkyl with 5 to 8 carbon atoms; aralkyl optionally substituted in the aryl moiety by halogen, lower alkyl or alkoxy; phenyl optionally substituted by halogen, lower alkyl or alkoxy; acyl with up to 18 carbon atoms optionally substituted by halogen or lower alkoxy; aroyl optionally substituted by halogen, lower alkyl or alkoxy; alkylsulfonyl; arylsulfonyl optionally substituted by halogen, amino, lower alkyl or alkoxy; or di-lower alkylamino; or

R″ and R‴, together with the bonding nitrogen atom, form a heterocyclic ring with 4 to 7 carbon atoms, which ring optionally contains oxygen or sulfur as further hetero-atoms, and

R⁗ is alkyl with 1 to 12 carbon atoms, cycloalkyl with 3 to 8 carbon atoms, alkenyl with up to 12 carbon atoms or aralkyl optionally substituted in the aryl moiety by halogen, lower alkyl or alkoxy,

which possess fungicidal, insecticidal, acaricidal, antibacterial and growth-regulating properties.

3,766,244

N-(SUBSTITUTED-PHENYL)-ω-AMINO-ALKAN(THIO)OATE, -ALKEN(THIO)OATE AND -ALKYN(THIO)OATE COMPOUNDS

Thomas J. Giacobbe and Fred Y. Edamura, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,531

Int. Cl. C07c *101/44*

U.S. Cl. 260—471 A 2 Claims

Compounds useful as herbicides and insecticides defined as N-(substituted-phenyl)-ω-amino-alkan(thio)oate, -alken(thio)oate and -alkyn(thio)oate compounds.

3,766,245

3,5-DIALKOXYALKOXY-4-SUBSTITUTED BENZOIC ACID ESTERS

Werner Hausermann, Allschwil, Ado Kaiser, Neu-Frenkendorf, and Marcel Scheer, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 16, 1969, Ser. No. 791,793, now Patent No. 3,622,610. Divided and this application Mar. 4, 1971, Ser. No. 121,158

Claims priority, application Switzerland, Feb. 9, 1968, 1,972/68

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R 5 Claims

3,5-bis-(benzyloxy)-4-methoxy-benzoic acid alkyl esters, are prepared, for example, from the corresponding 3,4,5-tris-(substituted-sulfonyloxy)-benzoic acid alkyl ester. The end products are useful in the preparation of 3,5-dihydroxy-4-methoxy-phenylalanines having hypotensive activity.

3,766,246

PROCESS FOR THE PREPARATION OF ALKYL 4,4′-DICHLOROBENZILATES AND 4,4′-DICHLOROBENZILIC ACID

Yair Sprinzak, Rehovoth, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovoth, Israel

No Drawing. Filed Nov. 5, 1968, Ser. No. 773,642

Claims priority, application Israel, Nov. 7, 1968, 28,906

The portion of the term of the patent subsequent to Oct. 24, 1989, has been disclaimed

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 A 6 Claims

Process for the preparation of alkyl 4,4′-dichlorobenzilates by oxidizing a corresponding alkyl bis-4-chlorophenylacetate in the presence of quaternary ammonium hydroxide catalysts and for the preparation of the 4,4′-dichlorobenzilic acid by subjecting the alkyl 4,4′-dichlorobenzilate obtained to hydrolysis.

3,766,247

POLYFLUOROALKOXY-SUBSTITUTED AROMATIC CARBOXYLIC ACIDS AND ESTERS AND SALTS THEREOF

Arthur Mendel, Vadnais Heights, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

No Drawing. Filed July 22, 1970, Ser. No. 57,350

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 R 17 Claims

Acyl halides, esters, amides, hydrazides and salts as well as the acid form derived from aromatic acids substituted by polyfluoroalkoxy groups. These compounds are valuable as synthetic intermediates in the preparation of physiologically active compounds.

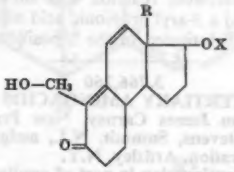
3,766,248

SUBSTITUTED TRICYCLIC COMPOUNDS AND PROCESS FOR THEIR PREPARATION

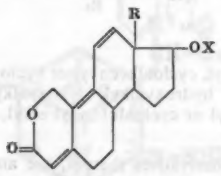
Lucien Nedelec and Robert Bucourt, Clichy-sous-Bois, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Continuation-in-part of applications Ser. No. 603,094, Dec. 20, 1966, now Patent No. 3,574,688, and Ser. No. 728,880, May 14, 1968. Said Ser. No. 728,880 being a continuation-in-part of application Ser. No. 603,457, Dec. 21, 1966, now abandoned. This application Mar. 9, 1970, Ser. No. 17,855
Claims priority, application France, Aug. 11, 1967, 117,736
Int. Cl. C07c *49/38, 69/24, 69/78*
U.S. Cl. 260—476 C 15 Claims

This invention relates to novel substituted tricyclic compounds of the formula



wherein R is alkyl having from 1 to 6 carbon atoms, X is selected from the group consisting of hydrogen, alkyl having from 1 to 5 carbon atoms, alkenyl having from 3 to 5 carbon atoms, alkoxyalkyl having from 2 to 5 carbon atoms, aralkyl having from 7 to 11 carbon atoms, cycloalkylalkyl having from 4 to 11 carbon atoms, alkylthioalkyl having from 2 to 5 carbon atoms, cycloalkyl having from 4 to 7 carbon atoms, and the acyl of an organic carboxylic acid having from 1 to 18 carbon atoms, as well as the process of preparing the same. These compounds are useful as intermediates in the preparation of 2-oxa steroids of the formula



which have an anabolic action coupled with an androgenic action.

3,766,249

BROMINATED CINNAMIC ACID ESTERS

Hilda Howell and Walter M. Kutz, Pittsburgh, Pa., assignors to Koppers Company, Inc.

No Drawing. Filed July 21, 1971, Ser. No. 164,824
Int. Cl. C07c *69/76*
U.S. Cl. 260—476 R 1 Claim

Solid organic polymers normally susceptible to burning are rendered self-extinguishing by incorporating therein an ester of α,β-dibromodihydrocinnamic acid or α,β-dibromodihydrocinnamyl alcohol; for example, 2,4-diisopropylphenyl α,β - dibromodihydrocinnamate. The self-extinguishing agents useful in the invention are unexpectedly stable to the hydrolytic conditions of impregnation, yet are highly reactive as self-extinguishing agents.

3,766,250

META-UREIDOPHENYLALKYL CARBAMATES

Kenneth P. Dorschner, Jacksonville, Fla., and James A. Albright, St. Louis, Mich., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed Aug. 15, 1972, Ser. No. 280,831
Int. Cl. C07c *125/06*
U.S. Cl. 260—482 C 6 Claims

Novel meta-ureidophenylalkyl carbamates are shown to have valuable herbicidal activity.

3,766,251

ACRYLIC AND METHACRYLIC MONOMERS

Gerardo Caporiccio, Milan, and Ezio Strepparola, Treviglio, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Jan. 21, 1971, Ser. No. 108,573
Claims priority, application Italy, Jan. 24, 1970, 19,750/70
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H 4 Claims

A new class of polymers comprising a main carbon chain and having polyfluoropolyether side groups. The polymers possess excellent soil and water resistant properties and are useful for rendering fabrics soil and moisture resistant. The polymers are prepared from a new class of polymerizable polyfluorinated polyether acrylates, methacrylates, acrylamides and methacrylamides. A new class of alcohols, useful for preparing the acrylate and methacrylate monomers is disclosed and methods for preparing the alcohols, monomers and polymers are disclosed.

3,766,252

UNSATURATED CARBOXYLIC ACID DERIVATIVES CONTAINING PHOSPHORUS

Erwin Schmidt, Kelkheim, Taunus, and Claus Beermann, Neu-Isenburg, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 26, 1971, Ser. No. 192,560
Claims priority, application Germany, Oct. 27, 1970, P 20 52 569.3
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R 8 Claims

Phosphonylalkyl (meth)-acrylates are useful monomers for the preparation of flame-proof copolymers having an improved affinity for dyestuffs. The new compounds are obtained by acylation of phosphonylalkyl alcohols or amines with acylating (meth-)acrylic acid derivatives.

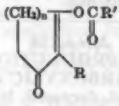
3,766,253

MONO-ENOL ESTERS OF 2-ALKYL-CYCLOALKANE-1,3-DIONES

Amnon Mordechai Cohen, Amersfoort, Netherlands, assignor to Polak's Frugal Works, N.V., Amersfoort, Netherlands

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,013
Claims priority, application Netherlands, Dec. 16, 1969, 6918843
Int. Cl. C07c *69/14, 69/24*
U.S. Cl. 260—488 R 2 Claims

New compounds having the generic formula



wherein R represents a straight-chained or branched alkyl radical containing from 4 to 7 carbon atoms or a cycloalkyl radical, R′ represents methyl or ethyl and *n* represents an integer from 1 to 2. The new compounds are useful as perfume ingredients.

3,766,254

LINEAR ALKYLPHENOL DISULFONATE PHOSPHATE-FREE DETERGENT ACTIVES

Samuel H. Sharman, Kensington, and Mitchell Danzik, Pinole, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed May 5, 1970, Ser. No. 34,886
Int. Cl. C07c *143/42*
U.S. Cl. 260—512 R 6 Claims

Heavy duty detergent active materials capable of heavy duty washing performance in the absence of phosphate builders are provided, the materials comprising ring polysulfonated alkylphenols in which the alkyl groups are linear of 16–22 carbon atoms and not more than 25 mol

percent of the active materials have the alkyl group attaching in a position para to the phenolic hydroxyl.

3,766,255

PROCESS FOR EXTRACTING SULFONIC ACIDS

Henry Shuttleworth, Pointe-a-Pierre, Trinidad, West Indies, assignor to Texaco Trinidad, Inc., Point-a-Pierre, Trinidad, West Indies

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,790
Int. Cl. C07c *143/02*
U.S. Cl. 260—513 R **2 Claims**

Sulfonic acids in the product from a sulfoxidation reaction are separated from sulfuric acid by extracting with at least one organic solvent the heavy phase resulting from the process reaction. Suitable organic solvents include halogenated compounds such as carbon tetrachloride, chlorobenzene and ethylene dichloride. From 400 to 600% by volume of solvent is used, and room temperature is preferred.

3,766,256

SUBSTITUTED-3,5-SECO-A-NOR-PREGNAN-3-OIC ACIDS

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 13, 1968, Ser. No. 736,568, which is a division of application Ser. No. 499,094, Oct. 20, 1965, which in turn is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964. Divided and this application May 24, 1971, Ser. No. 146,440
Int. Cl. C07c *61/30, 61/36*
U.S. Cl. 260—514 **3 Claims**

This invention is directed to substituted-3,5-seco-A-norpregnan-3-oic acids and derivatives thereof which are useful as intermediates in the synthesis of known 9β,10α-steroids of the pregnane series. The latter compounds can be utilized as both progestational and salt-retaining agents.

3,766,257

INTEGRATED TEREPHTHALIC ACID PROCESS

William W. Wimer, Anvil Hills, and Ronald D. Bushick, Glen Mills, Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed May 28, 1971, Ser. No. 147,849
Int. Cl. C07c *63/26*
U.S. Cl. 260—515 P **14 Claims**

An integrated process for preparation of terephthalic acid from benzoic, phthalic, or isophthalic acids involving Henkel technology whereby ion exchange reactions are used as a means to obtain intermediates which enable recovery and reuse of potassium.

3,766,258

PROCESS FOR THE PRODUCTION OF AROMATIC POLYCARBOXYLIC ACIDS

Robert M. Engelbrecht, deceased, late of St. Louis, Mo., by Alice M. Engelbrecht, executrix, St. Louis, and James C. Hill, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 29, 1970, Ser. No. 50,983
Int. Cl. C07c *63/00, 63/26*
U.S. Cl. 260—515 P **12 Claims**

A process for the carboxylation of aromatic carboxylic acids comprises preparing an alkali metal aromatic carboxylate from an aromatic carboxylic acid having the same ring structure as the aromatic carboxy acid to be produced, heating in an inert atmosphere under substantially anhydrous conditions said carboxylate to a temperature of from about 300° centigrade to a temperature below that temperature at which said carboxylate and the desired reaction products substantially decompose and in the presence of an acid binding agent and a basic metal carbonate catalyst selected from group which consists of basic cupric carbonate and basic chromium carbonate and acidifying the resultant salts whereby the aromatic carboxylic acid produced contains at least one more carboxyl group that the aromatic carboxylic acid to be carboxylated. Aromatic carboxylic acids produced by this process are useful as raw materials for the production of polyesters for fibers, films and plasticizers.

3,766,259

PREPARATION OF 1-ARYL-3-INDENYL ACETIC ACIDS

Meyer Sletzinger and Donald F. Reinhold, North Plainfield, and Ronald Harmetz, Dover, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed May 1, 1970, Ser. No. 33,971
Int. Cl. C07c *147/00*
U.S. Cl. 260—515 A **5 Claims**

Process for the preparation of 1-benzylidene-3-indenyl aliphatic acid compounds comprising reducing a nitrobenzene to form an aniline which is diazotized and then undergoes a Meerwein reaction and subsequent hydrogenolysis to yield a β-aryl propionic acid which is cyclized, condensed and substituted in the 1-position.

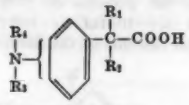
3,766,260

TERTIARY AMINOACIDS

Richard William James Carney, New Providence, and George de Stevens, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 792,755, Jan. 21, 1969, which is a continuation-in-part of application Ser. No. 757,136, Sept. 3, 1968, now Patent No. 3,657,230, which in turn is a continuation-in-part of abandoned application Ser. No. 716,347, Mar. 27, 1968. This application Sept. 29, 1969, Ser. No. 862,014
Int. Cl. C07c *101/44*
U.S. Cl. 260—518 R **2 Claims**

New α-(tert. arylaminophenyl)-aliphatic acids, e.g. those of the formula



R_1=H or alkyl,
R_2=H, alk(en)yl, cycloalk(en)yl or cycloalk(en)yl-alkyl,
R_3=alk(en)yl, hydroxyalkyl, alkoxyalkyl, aminoalkyl, cycloalk(en)yl or cycloalk(en)yl-alkyl,
R_4=aryl,

and functional derivatives thereof, are anti-inflammatory agents.

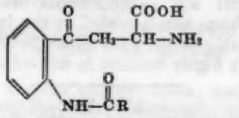
3,766,261

PROCESS OF PRODUCING KYNURENINE

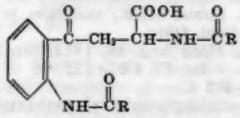
John W. Finley, Walnut Creek, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Aug. 21, 1970, Ser. No. 66,083, now Patent No. 3,702,255. Divided and this application July 14, 1972. Ser. No. 271,892
Int. Cl. C07c *101/24*
U.S. Cl. 260—518 R **1 Claim**

Edible materials, particularly food products, are sweetened by the incorporation of a kynurenine derivative responding to either of the following formulas:



wherein R is H or lower alkyl;



wherein each R is H or lower alkyl.

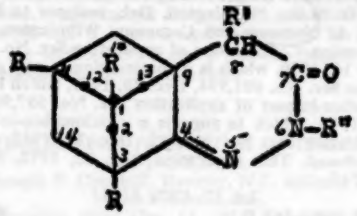
3,766,262
2-HYDROAZONO-1-ADAMANTANE ACETIC ACIDS

Stephen Slomo Szinai, Wokingham, and Jiban Kumar Chakrabarti, Frimley, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Original application May 1, 1969, Ser. No. 821,078, now Patent No. 3,627,764. Divided and this application Apr. 5, 1971, Ser. No. 131,440
Int. Cl. C07c *109/14*
U.S. Cl. 260—518 R 3 Claims

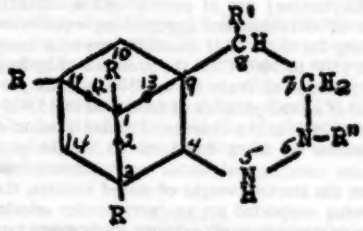
Adamantanopyridazine compounds of the formulae

(I)



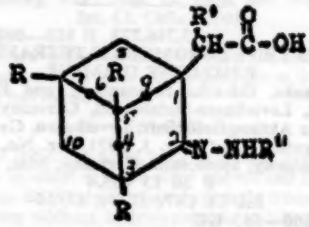
and

(II)



and intermediates useful in the synthesis of these compounds, the intermediates being of the formula:

(III)



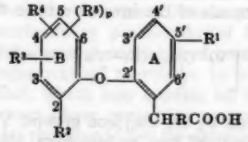
The adamantanopyridazine compounds (Formulae I and II) are useful as anti-inflammatory agents and as CNS depressants.

3,766,263
SUBSTITUTED 2-PHENOXYPHENYLACETIC ACIDS

Keith Ernest Godfrey, Pocklington, England, assignor to Reckitt & Colman Products Limited, Hull, Yorkshire, England

No Drawing. Filed Apr. 9, 1971, Ser. No. 132,891
Claims priority, application Great Britain, Apr. 14, 1970, 17,832/70
Int. Cl. C07c *69/76*
U.S. Cl. 260—520 7 Claims

Compounds of the formula:



which have from 2 to 4 substituents in the B ring wherein R, R^1, R^2, R^3, R^4 and R^5 represent certain specified substituent groups and *p* is selected from 0, 1 and 2. The compounds of the invention possess anti-inflammatory activity.

3,766,264
PROCESS FOR RESOLVING 2-(2β-BENZYLOXYMETHYL-3α-HYDROXY - 4 - CYCLOPENTENE-1α-YL)ACETIC ACID

Thomas K. Schaaf, Old Lyme, and Thomas J. Daniels, Waterford, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Mar. 2, 1971, Ser. No. 120,315
Int. Cl. C07c *65/14*
U.S. Cl. 260—520 2 Claims

A process for resolving 2-(2β-benzyloxymethyl-3α-hydroxy-4-cyclopentene-1α-yl)acetic acid which comprises fractionally crystallizing the (+)-amphetamine salt of said acid from isopropyl ether and a solvent selected from chloroform, methylene chloride, or acetonitrile.

3,766,265
PROCESS FOR THE PREPARATION OF ACRYLIC ACID

Tatsuo Shiraishi, Susumu Kishiwada, Shinkichi Shimizu, Shigeru Honmaru, Yoshihiko Nagaoka, and Kiyokazu Zinpo, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka-fu, Japan

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,938
Claims priority, application Japan, Mar. 26, 1971, 46/18,055
Int. Cl. C07c *51/26, 57/04*
U.S. Cl. 260—530 N 10 Claims

In the preparation of acrylic acid by the gas phase catalytic oxidation of acrolein with molecular oxygen in the presence of steam, a process wherein the oxidation is effected in the presence of a catalyst composition corresponding to the formula: $Mo_aV_b(Li_2SO_4)_cO_d$ wherein *a*, *b* and *d* represent respectively the number of atoms and *c* is the mol number of lithium sulfate, and wherein *a* is 12, *b* is 0.1 to 9.0, *c* is 0.1 to 9.0 and *d* is 36.25 to 58.5. The catalyst composition has a high catalytic activity with a long catalytic life, and acrylic acid is produced in an excellent yield with a high purity by the use of such composition.

3,766,266
METHOD OF PRODUCING N-ACYL-ALPHA-AMINO ACIDS

Hachiro Wakamatsu and Jyunko Uda, Tokyo, and Nobuyuki Yamagami, Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Filed Mar. 25, 1971, Ser. No. 128,164
Claims priority, application Japan, Apr. 4, 1970, 45/28,773
Int. Cl. C07c *99/00*
U.S. Cl. 260—534 C 6 Claims

When an aldehyde is reacted with carbon monoxide and the amide of a carboxylic acid in the presence of a carbonylation catalyst, there is obatined the N-acyl derivative of an α-amino acid having one more carbon atom than the aldehyde used, the acyl group corresponding to that of the amide. The reactants may be formed in situ. Amino acids may be produced by hydrolyzing the N-acyl-α-amino acid.

3,766,267
QUATERNARY HALIDES OF GLUCONAMIDES

Henry Zak, Great Notch, and Donald E. Conner, Clifton, N.J., assignors to Van Dyk & Company, Incorporated, Belleville, N.J.

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,733
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 B 3 Claims

Novel compositions of matter consisting of quaternary halides of trialkyl or hydroxyalkyl amino alkyl gluconamides have been found to be excellent emollients having high substantivity for skin. They are prepared, for ex-

ample, by the condensation of delta gluconolactone with gamma dimethylaminopropyl amine and the the resulting gluconamide quaternized by reaction with an alkyl halide or hydroxyalkyl halide.

3,766,268
SEMICARBAZONES OF DESA-PREGN-9-ENE-5-ONES

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application June 13, 1968, Ser. No. 736,587, which is a division of application Ser. No. 499,094, Oct. 20, 1965, which in turn is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application May 24, 1971, Ser. No. 146,422

Int. Cl. C07c *133/02*

U.S. Cl. 260—554 **1 Claim**

This invention is directed to substituted desA-pregnenes and derivatives thereof which are converted to semicarbazones thereof and subsequently converted to known 9β,10α-steroids of the pregnane series. The latter compounds are useful as both progestational agents and as salt-retaining agents.

3,766,269
OXY-BIS-(N-ALKYLAMIDES) AND THEIR USE AS SLIP ADDITIVES

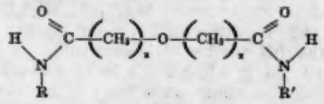
Richard James Powell, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 11, 1971, Ser. No. 142,335

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 B **5 Claims**

Oxy-bis-(N-alkylamides) having the formula



wherein x is 1 or 2, R is an alkyl group of 4 to 22 carbon atoms and R′ is an alkyl group of 4 to 22 carbon atoms and compositions comprising (A) polyethylene, polypropylene, copolymers of ethylene and alpha-olefins of more than 2 carbon atoms, copolymers of propylene and alpha-olefins of more than 3 carbon atoms, copolymers of ethylene and vinyl acetate containing up to about 12 percent by weight vinyl acetate polymerized units or mixtures thereof, and (B) 300 to 20,000 p.p.m. by weight of any oxy-bis-(N-alkylamide).

3,766,270
ALKYLAMINOOXANIL OXIMES

Heinrich Hiller, Mannheim, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed June 9, 1971, Ser. No. 151,559

Int. Cl. C07c *103/30*

U.S. Cl. 260—562 N **3 Claims**

Substituted alkylaminoooxanil oximes having a good herbicidal action in controlling the growth of unwanted plants.

3,766,271
HOMOGENEOUS CATALYSTS USEFUL IN THE REDUCTION OF NITROPARAFFINS TO AMINES

John F. Knifton, Poughquag, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,131

Int. Cl. C07c *85/00*

U.S. Cl. 260—563 R **8 Claims**

This invention relates to a process for reducing nitroparaffinics containing 3 to 20 carbon atoms by heating said nitroparaffins at reaction temperatures ranging from 35° C. to 150° C., in a highly alkaline, substantially non-aqueous reaction medium with a ruthenium or iron homogeneous catalyst, in a substantially hydrogen atmosphere at superatmospheric pressures of at least 100 p.s.i.g. and continuing heating said reaction mixtures until the nitroparaffins are reduced to the corresponding amines.

3,766,272
4,4′-METHYLENEDI(CYCLOHEXYLAMINE) ISOMERIZATION OVER A SUPPORTED CATALYST

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of application Ser. No. 11,829, Feb. 16, 1970, which is a continuation-in-part of application Ser. No. 691,994, Dec. 20, 1967, which is a continuation-in-part of application Ser. No. 587,980, Oct. 20, 1966, which in turn is a continuation-in-part of application Ser. No. 516,092, Dec. 23, 1965, all now abandoned. This application Aug. 25, 1972, Ser. No. 283,745

Int. Cl. C07c *87/32*

U.S. Cl. 260—563 B **8 Claims**

A mixture of the stereoisomers of 4,4′-methylenedi-(cyclohexylamine) not at equilibrium is converted to a mixture of stereoisomers approaching equilibrium ratio by heating the mixture of stereoisomers to a temperature of from 150° to 300° C. in the presence of hydrogen at a partial pressure of from 50 to 5500 pounds per square inch and at a total pressure of from 500 to 15,000 pounds per square inch in the absence of added ammonia and in the presence of from 0.001 to 10 weight percent of ruthenium catalyst, calculated as ruthenium metal and based on the starting weight of mixed isomers, the ruthenium being supported on an inert carrier selected from the group consisting of calcium carbonate, rare earth oxides, rare earth carbonates and mixed rare earth oxide-carbonates.

3,766,273
N,N′-BIS-TRIFLUOROMETHYLTETRAFLUORO-ETHYLENE DIAMINE

Erich Klauke, Odenthal-Hahnenberg, and Hans Holtschmidt, Leverkusen-Steinbuchel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,743

Claims priority, application Germany, Mar. 20, 1970, P 20 13 435.4

Int. Cl. C07c *87/14, 87/16*

U.S. Cl. 260—583 GG **1 Claim**

Novel N,N′-bis-trifluoromethyltetrafluoroethylene diamine as prepared by reacting tetrachloroethylene-1,2-bis-isocyanide dichloride with anhydrous hydrofluoric acid until hydrogen chloride evolution ceases. This novel compound is useful in organic synthesis and directly as an insecticide.

3,766,274
POLYFLUOROISOALKOXYALKYL SUBSTITUTED AMINES AND QUATERNARY AMMONIUM SALTS

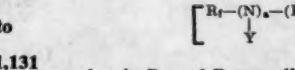
Louis G. Anello, Orchard Park, and Richard F. Sweeney, Elma, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,622

Int. Cl. C07c *93/04*

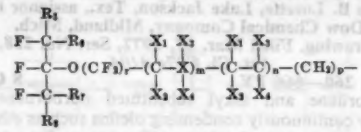
U.S. Cl. 260—584 C **20 Claims**

The compounds of the invention have the formula



wherein R_1 and R_2 are alkylene groups, Y can be hydrogen or an alkyl, Y′ can be hydrogen, alkyl or hydroxyalkyl, W is a quaternary ammonium radical having A as an accompanying anion, or W is a tertiary amine radical,

and R_f is a polyfluoroisoalkoxyalkyl radical of the formula



wherein R_5–R_8 can be fluorine, chlorine, or perhaloalkyl, X_1–X_4 independently can be hydrogen, fluorine, chlorine or bromine, r is an integer from 1–2, m and n are integers from 0–20, and p is an integer from 0–1. These compounds are surface active agents and can impart oil and water repellent properties to textiles.

3,766,275
PROCESS FOR PREPARING A DITHIOL-BUTANEDIOL
Joseph P. Claudelli, Ramsey, N.J., assignor to Avon Products, Inc.
No Drawing. Filed Mar. 15, 1971, Ser. No. 124,529
Int. Cl. C07c *149/18*
U.S. Cl. 260—609 R **11 Claims**

The method of making a 1,4-dithiol-2,3-butanediol and corresponding mercaptides by reacting butadiene dioxide with hydrogen sulfide in a non-aqueous solvent in the presence of an alkaline catalyst while maintaining the temperature within the range of from about 15° to 40° C., the ratio of said solvent to said dioxide, by volume, being at least about 5:1, and separating the 1,4-dithiol-2,3-butanediol formed.

3,766,276
PHENOL ALKYLATION PROCESS
Lloyd E. Goddard, Orangeburg, S.C., assignor to Ethyl Corporation, Richmond, Va.
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,158
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 R **8 Claims**

Phenols are orthoalkylated by reaction with an olefin in the presence of an aluminum phenoxide at 100–500° C. The olefin has the structure:

$$R—CH=CH—R$$

in which R is a C_{1-50} alkyl, a C_{6-20} aryl, or hydrogen. The product is an ethyl or o-sec-alkyl phenol and is recovered by distilling the alkylated phenols directly from the alkylation mixture without hydrolyzing the catalyst. The residue can then be recycled as the catalyst. The distillate is fractioned to recover product. Di-o-alkylated phenols can be recycled to the alkylation reaction where they serve to transalkylate the starting phenolic reactant.

3,766,277
RECOVERY OF PENTAERYTHRITOL USING TERT-BUTYL ALCOHOL
Clarence J. Duey, Bay City, Roy H. Prinz, Robstown, and James M. Ramey, Spring, Tex., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,215
Int. Cl. C07c *31/24*
U.S. Cl. 260—637 P **11 Claims**

Aqueous solutions containing pentaerythritol and an alkali or alkaline earth metal alkanoate, such as the pentaerythritol-sodium formate solutions produced in the course of manufacturing pentaerythritol from acetaldehyde, formaldehyde, and sodium hydroxide, are treated to recover pentaerythritol therefrom by extracting with tert-butyl alcohol, which may contain up to 30% water, to form an extract phase containing pentaerythritol. The pentaerythritol is recovered from the extract by crystallization. The crystallization step can be improved by treating the extract, prior to the crystallization step, with charcoal or a macroreticular resin.

3,766,278
CONVERSION OF HYDROCARBONS
Marcel J. P. Bogart, Whittier, Calif., and Anders Nielsen, Naerum, Jens Rostrup-Nielsen, Virum, and Johannes Wrisberg, Gammel Holte, Denmark, assignors to Haldor Frederik Axel Topsoe, Frydenlundsvej Vedbaek, Denmark, and Fluor Corporation, Los Angeles, Calif.
Filed June 9, 1971, Ser. No. 151,400
Int. Cl. C10g *37/04*
U.S. Cl. 260—683 R **10 Claims**

Olefins, especially ethylene and propylene, are prepared by passing gaseous saturated hydrocarbons and/or vaporized normally liquid hydrocarbons in the presence of steam first through a catalytic reaction zone maintained at a temperature of 200–850° C. and subsequently through a thermal reaction zone maintained at a temperature of 700–950° C.; in a preferred embodiment the temperature in at least a third of the thermal reaction zone is higher than the maximum temperature in the catalytic reaction zone. By this process there is obtained an improved yield of olefins and especially of ethylene and propylene in comparison with the known conversion reactions to prepare olefins from saturated hydrocarbons.

3,766,279
PRODUCTION OF ALCOHOLS
Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,407
Int. Cl. C07c *29/14, 31/02*
U.S. Cl. 260—638 B **5 Claims**

Aldehydes are converted to higher molecular weight alcohols by simultaneous aldol condensation and hydrogenation reactions which are catalyzed by a ruthenium-biphyllic ligand catalyst in the presence of a strong base. The reaction is performed under mild conditions at temperatures from 30° to 300° C. and pressures from 1 to about 1000 atmospheres. The aldehyde is contacted with hydrogen in the presence of the catalyst which comprises a mixture of an alkali metal hydroxide and ruthenium in complex association with a biphyllic ligand.

3,766,280
DIORGANOMAGNESIUM REAGENTS AND METHODS OF PREPARING SAME
Conrad W. Kamienski, Gastonia, N.C., and Jerome F. Eastham, Knoxville, Tenn., assignors to Lithium Corporation of America, Bessemer City, N.C.
No Drawing. Continuation of application Ser. No. 728,838, May 13, 1968. This application Oct. 28, 1970, Ser. No. 84,932
Int. Cl. C07f *3/02*
U.S. Cl. 260—665 R **6 Claims**

Diorganomagnesium reagents are prepared by processes which separate halides as insoluble salts from magnesium reagents. The processes are convenient and practical and provide diorganomagnesium compounds and derivatives as solids or in solution with or without solvation; the processes have provided new diorganomagnesium compounds and derivatives and solutions of di-

organomagnesium compounds never previously obtained. One principal process by which the separation is accomplished is precipitation of the salt lithium halide from reaction of an organolithium reagent with an organomagnesium halide or with a magnesium halide. A second process developed for separation of halide from a magnesium reagent involves formation of the salt magnesium halide from an organomagnesium halide in a medium that will not dissolve the salt. A third process involves reaction of magnesium directly with an organic halide under conditions that produce a mixture of magnesium halide and diorganomagnesium compound, the latter of which can be dissolved into suitable solvents leaving the halide as insoluble salt.

3,766,281

PROCESS FOR PREPARING BISORGANOALKALINE EARTH METAL COMPOUNDS FROM ORGANOTIN COMPOUNDS

Peter West, Wellesley, and Mary C. Woodville, Milton, Mass., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed July 27, 1972, Ser. No. 275,465

Int. Cl. C07f *3/00, 3/04*

U.S. Cl. 260—665 R **7 Claims**

Compounds of the formula $(R)_2M$, wherein M is calcium, strontium or barium and R is vinyl, allyl, 2-methallyl, benzyl or alkyl-substituted benzyl are prepared in the novel process comprising contacting calcium, strontium or barium with a solution of $(R)_4Sn$ dissolved in an inert solvent. As an example, diallylstrontium was prepared by contacting a solution of tetraallyltin in tetrahydrofuran with metallic strontium at room temperature for 22 hours in the presence of a catalytic amount of mercuric bromide.

3,766,282

1-(1-ALKENYL) BICYCLO(1.1.0)BUTANES AND THEIR HOMOPOLYMERS

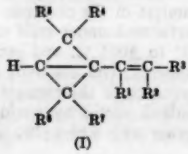
James B. Sieja, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application Jan. 27, 1970, Ser. No. 6,284, now Patent No. 3,661,875. Divided and this application Apr. 14, 1971, Ser. No. 134,085

Int. Cl. C07c *23/00, 23/06*

U.S. Cl. 260—666 PY **8 Claims**

Disclosed herein are bicyclobutanes of the formula



(I)

wherein R^1, R^2, R^3, R^4, R^5, R^6, and R^7 may be hydrogen or a hydrocarbyl group of 1–18 carbon atoms which is free of olefinic or acetylenic unsaturation, with the provisco that the pairs R^1 and R^2, R^2 and R^3, R^4 and R^5, and R^6 and R^7 taken together may, respectively, be tetramethylene or pentamethylene diradicals. The above compounds are prepared by treating 3-alkoxycyclobutanone with a 1-alkenyl Grignard reagent to obtain the corresponding 1-alkenyl-3-alkoxy-1-hydroxycyclobutane which is treated with a hydrogen halide to form a mixture of 1-alkenyl-3-alkoxy-1-halocyclobutane and 3-alkoxy-1-(2-haloalkenylidene)cyclobutane. Those compounds are then treated with a metal capable of removing halogen (such as sodium, magnesium, zinc, etc.) to obtain the corresponding 1-(1-alkenyl)bicyclo[1.1.0]butane. These bicyclobutanes can be converted to homopolymers, which are useful as self-supporting films, fibers and molding powder.

3,766,283

PREPARATION OF NORBORNENES

Nicholas B. Lorette, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,465

Int. Cl. C07c *3/04*

U.S. Cl. 260—666 PY **8 Claims**

Norbornene and alkyl substituted norbornenes are made by continuously condensing olefins such as ethylene, propylene, etc. with dicyclopentadiene or cyclopentadiene in the presence of an inert solvent in a pressurized reactor. Increased yields of the desired norbornenes are obtained by recycling the by-products back to the reactor to react with additional olefins.

3,766,284

3-ETHYLIDENETRICYCLO[4.2.1.0^{2,5}]-NON-7-ENE

Antonio Carbonaro, Alberto Greco, Gino Dall'Asta, and Nazzareno Cameli, Milan, Italy, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Original application Mar. 31, 1971, Ser. No. 129,972, now Patent No. 3,699,088, dated Oct. 17, 1972. Divided and this application Mar. 30, 1972, Ser. No. 239,807

Claims priority, application Italy, Apr. 9, 1970, 23,085/70

Int. Cl. C07c *13/00*

U.S. Cl. 260—666 PY **2 Claims**

3-ethylidenetricyclo[4.2.1.0^{2,5}]-non-7-ene is prepared by isomerizing 3-vinyltricyclo[4.2.1.0^{2,5}]-non-7-ene. Copolymers of this monomer are prepared by polymerization with α-olefins with reduced metal catalysts. Elastomers are obtained from ethylene, propylene and 3-ethylidenetricyclo[4.2.1.0^{2,5}]-non-7-ene. These polymers are sulfur-vulcanizable at an excellent rate and the resulting products have good mechanical properties.

3,766,285

SYNTHETIC OILS

Jesse K. Boggs, Houston, Tex., and Arthur W. Langer, Jr., Watchung, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,173

Int. Cl. C07c *15/04*

U.S. Cl. 260—668 R **6 Claims**

The present invention relates to synthetic oils which are tertiary-alkylated benzene and -naphthalene, wherein the tertiary alkyl substituents contain from 7 to 44, preferably an average of from 14 to 44 carbon atoms. The compositions have utility as hydraulic oils, as lubricants, and in the formulation of greases.

The tertiary alkyl-benzenes and -naphthalenes have higher boiling points and lower viscosities than the natural petroleum oils of the same average number of total carbon atoms, thereby providing a superior product where low volatility and high flash point at a given viscosity are required. The substantial absence of a hydrogen atom on the carbon alpha to the benzene ring makes the compositions of the present invention much superior in oxidation and thermal stability as compared to the primary and secondary alkyl benzenes and natural petroleum oils which are available.

3,766,286

PROCESS FOR THE ISOMERIZATION OF HYDROCARBONS

George A. Olah, Cleveland, Ohio, assignor to Esso Research and Engineering Company

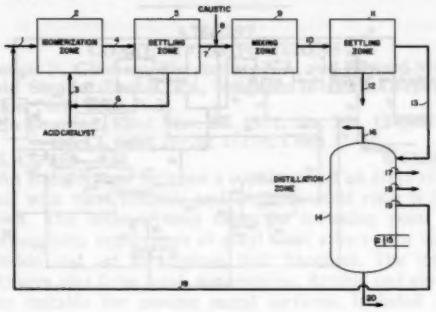
Filed June 25, 1971, Ser. No. 156,822

Int. Cl. C07c *5/28*

U.S. Cl. 260—668 A **17 Claims**

Paraffinic and/or alkyl substituted aromatic hydrocarbons are isomerized with a catalyst comprising (a) a Lewis acid of the formula MX_n where M is selected from Group IV–B, V or VI–B of the Periodic Table, X is a

halogen and *n* varies from 3 to 6, and (b) a strong Bronsted acid comprising fluorosulfuric acid, trifluoro-



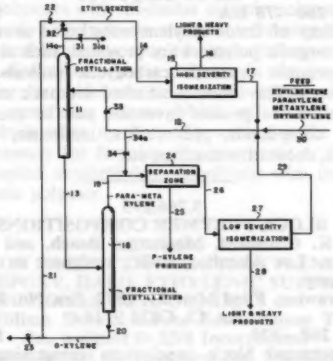
methanesulfonic acid, trifluoroacetic acid or mixtures thereof.

3,766,287

SEPARATION OF C_8 AROMATIC HYDROCARBONS

Donald G. Stenmark, Houston, and Robert D. Wesselhoft, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed July 23, 1971, Ser. No. 165,600
Int. Cl. C07c *15/08*
U.S. Cl. 260—668 A **16 Claims**



Paraxylene is recovered from a mixture of xylenes and ethylbenzene by separating the mixture into two streams—one which is rich in ethylbenzene and orthoxylene and another which is rich in metaxylene—and separately isomerizing the two streams under different conditions to obtain a maximum amount of paraxylene.

3,766,288

PROCESS FOR PREPARATION OF ALKENYLBENZENE

Takeo Shima, Takanori Urasaki, and Iwao Omae, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed Mar. 27, 1972, Ser. No. 238,584
Claims priority, application Japan, Mar. 29, 1971, 46/18,602
Int. Cl. C07c *3/52*
U.S. Cl. 260—668 B **9 Claims**

A process for preparing alkenylbenzenes, which comprises reacting alkylbenzenes with 1,3-butadiene at an elevated temperature in the presence of an alkali metal catalyst in the substantial absence of oxygen and moisture, wherein such catalyst is composed of

(1) 0.005 to 0.4% by weight, based on the alkylbenzene, of metallic potassium, and
(2) metallic sodium in an amount expressed by the following equation

$$(4.1x+2.0)\geqq Na\geqq(-0.073x+0.05)$$

wherein x represents the amount in weight percent of the metallic potassium.

3,766,289

REGENERATION OF A LOW SURFACE AREA DEHYDROGENATION CATALYST

Abraham D. Cohen, Sarnia, Ontario, Canada, assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,264
Int. Cl. C07c *5/18*
U.S. Cl. 260—669 R **7 Claims**

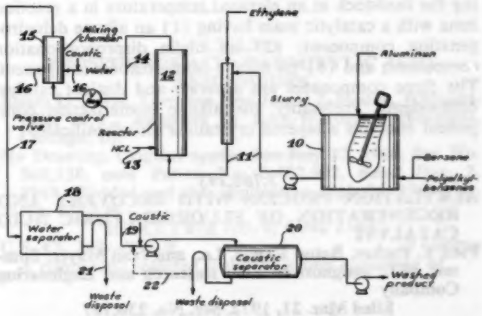
In dehdrogenating an organic compound, i.e., ethylbenzene to styrene, in the vapor phase in the presence of sulfur oxide over a critically defined low surface area magnesium oxide catalyst, there can occur a loss in surface area of said catalyst such that the surface area of the magnesium oxide catalyst falls below the critically defined range so as to seriously affect the yield to the dehydrogenated product. The surface area of said catalyst employed in dehydrogenating the organic compound can be increased and thus brought within the critically defined range by contacting the magnesium oxide catalyst with H_2O, i.e., water and/or steam, at a temperature in the range of from about 33° to about 950° F., and thereafter calcining said H_2O-treated magnesium oxide catalyst at a temperature in the range of from about 800° to about 2000° F.

3,766,290

PROCESS FOR THE PREPARATION OF ETHYLBENZENE

Cleo Dale Carlson, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 10, 1972, Ser. No. 279,652
Int. Cl. C07c *3/62*
U.S. Cl. 260—672 T **7 Claims**



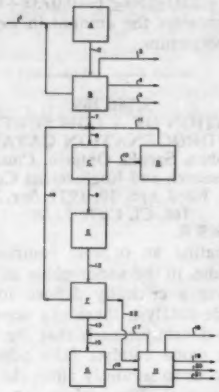
An improved process for the alkylation of aromatic compounds in the presence of an aluminum chloride-based catalyst wherein the catalyst is formed in situ in the alkylation reactor and is used single pass with no recycle. The reactor is operated at temperatures of between about 130° C. and about 250° C. and at a pressure sufficient to maintain the aromatic reactants in the liquid phase and for a time of about 2 to about 15 minutes residence time. Simultaneous dealkylation of higher polys is possible while maintaining good production of mono-alkylated product.

3,766,291

PARA-XYLENE PRODUCTION

Lewis E. Drehman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Mar. 24, 1972, Ser. No. 237,760
Int. Cl. C07c 5/26, 5/27
U.S. Cl. 260—673.5 9 Claims



A feedstock comprising 3-methylbutene-1 is converted to para-xylene by disproportionation to 2,5-dimethylhexene which is subsequently dehydrocyclized over a catalyst comprising at least one Group VIII metal in association with tin in combination with a Group II aluminate spinel support material.

3,766,292

PROCESS FOR OBTAINING ISOPENTANE FROM BUTANE, HEXANE OR MIXTURES THEREOF

Robert G. Wall, Pinole, and Jacob D. Kemp, El Cerrito, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,182
Int. Cl. C07c 9/00
U.S. Cl. 260—676 R 7 Claims

A process for obtaining relatively high yields of isopentane from an alkane feedstock which comprises contacting the feedstock at an elevated temperature in a reaction zone with a catalytic mass having (1) an alkane dehydrogenation component; (2) an olefin disproportionation component; and (3) an alkane isomerization component. The three components are separate and distinct catalyst components. Preferably, the alkane isomerization component contains a layered crystalline aluminosilicate.

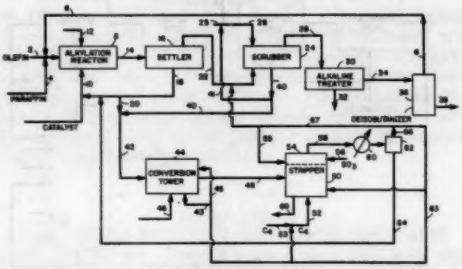
3,766,293

ALKYLATION PROCESS WITH RECOVERY AND REGENERATION OF FLUOROSULFURIC ACID CATALYST

Paul T. Parker, Baton Rouge, La., and Ivan Mayer, Summit, N.J., assignors to Esso Research and Engineering Company

Filed Mar. 21, 1972, Ser. No. 236,737
Int. Cl. C07c 3/54
U.S. Cl. 260—683.58 13 Claims

The present invention provides an improved alkylation process comprising: contacting an olefin and a paraffin with an alkylation catalyst comprising fluorosulfuric acid, at alkylation conditions, in an alkylation reactor, thereby forming a hydrocarbon phase comprising alkylate reactor product and containing at least a portion of the catalyst; washing the hydrocarbon phase with an acid comprising sulfuric acid to form an acid phase containing fluorosulfuric acid, hydrofluoric acid, and sulfuric acid; contacting the acid phase with water thereby converting at least a portion of the fluorosulfuric acid to hydrogen fluoride and sulfuric acid; removing at least a portion of the hydrogen fluoride from the acid phase by contacting the same with a paraffin such as n-butane thereby forming a hydrocarbon phase containing hydrogen fluoride;



treating the hydrocarbon phase with sulfur trioxide to regenerate the fluorosulfuric acid; and recycling at least a portion of the regenerated fluorosulfuric acid to the alkylation zone to be used as an alkylation catalyst therein.

3,766,294

IMIDO-ALKYLENE SUBSTITUTED AROMATIC CARBOCYCLIC POLYMERS

Johann F. Klebe and Thomas J. Windish, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 846,623, July 1, 1969. This application June 23, 1971, Ser. No. 156,067
Int. Cl. C08g 20/00
U.S. Cl. 260—78 UA 11 Claims

A variety of imido-alkylene substituted aromatic carbocyclic organic polymers are provided, such as polymers having pendant aromatic carbocyclic radicals, such as polystyrenes. The imido-substituted aromatic carbocyclic polymers of the present invention can be employed as molding compounds, photoresists, laminates, varnishes, adhesives, decorative coatings, etc.

3,766,295

BLOCK POLYMER COMPOSITIONS

Ronald K. Crossland, Manhattan Beach, and Geoffrey Holden, Los Alamitos, Calif., assignors to Shell Oil Company

No Drawing. Filed Mar. 23, 1972, Ser. No. 237,540
Int. Cl. C07d 9/16
U.S. Cl. 260—829 10 Claims

Hydrogenated block copolymers comprising in part hydrogenated polymer blocks of butadiene or isoprene are extended with low molecular weight hydrogenated polybutadiene or hydrogenated polyisoprene oligomers respectively; these oligomers have similar microstructures to the microstructure of the corresponding hydrogenated diene polymer block of the block copolymer. The physical properties of these blends are superior to similar blends prepared by the use of mineral extending oils or other low molecular weight polymers.

3,766,296

ADDUCTS OF TRIGLYCIDYL ISOCYANURATE WITH NOVOLAKS ABLE TO FORM CROSS-LINKS

Karl Heinz Kassner, Dusseldorf, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,339
Claims priority, application Germany, Apr. 1, 1971, P 21 15 854.3
Int. Cl. C08g 45/08
U.S. Cl. 260—831 9 Claims

Process for the preparation of adducts of triglycidyl isocyanurate and hardeners capable of cross-linking, and

prepared by reacting crystallized triglycidyl isocyanurate with an epoxide oxygen content of at least 14%, with novolaks with the weight proportion 25:75 to 70:30 during 20 to 120 minutes at temperatures from 110 to 170° C.

3,766,297

COATING COMPOSITIONS

Thomas N. Ginsberg, Piscataway, N.J., and Edward Marvin Smolin, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,582
Int. Cl. C08f *29/20, 37/16;* C08g *37/16*
U.S. Cl. 260—853 8 Claims

An interpolymer between a copolymer of an alkyl vinyl ether with vinyl chloride and an aminoplast resin is disclosed. The interpolymers raise the softening point of thermoplastic copolymers of alkyl vinyl ethers with vinyl chloride and act to improve their hardness. The interpolymers also form hard, nonblocking, flexible and glossy films suitable for coating metal surfaces. Included are compositions based on these interpolymers which are useful for hard-coating metal surfaces and procedures for coating metal surfaces with such interpolymer compositions.

3,766,298

PROCESS FOR PREPARING NON-TACKY COUPLED OXYMETHYLENE COPOLYMERS

Francis Borgia McAndrew, Springfield, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,960
Int. Cl. C08g *41/04*
U.S. Cl. 260—858 7 Claims

Disclosed and claimed herein is a process for preparing improved isocyanate or isothiocyanate coupled oxymethylene copolymers with dissimilar organic polymers which are not tacky. The process comprises forming the isocyanate or isothiocyanate coupled oxymethylene copolymer with the dissimilar organic polymer in the presence of excess free formaldehyde or a small amount of a formaldehyde generating source which will freely generate formaldehyde when mechanically worked at the temperatures necessary for forming the isocyanate or isothiocyanate coupled oxymethylene copolymer with the dissimilar organic polymer.

3,766,299

REACTION PRODUCT OF POLYALKYLENE IMINE AND EPOXY, HALO, ETHYLENIC SUBSTITUTED DIFUNCTIONAL COMPOUNDS

Ralph William Dornte, Lower Southampton Township, Pa., assignor to ESB Incorporated

Continuation-in-part of application Ser. No. 86,883, Nov. 4, 1970, now Patent No. 3,726,703. This application Sept. 30, 1971, Ser. No. 174,135
Int. Cl. C08g *33/06*
U.S. Cl. 260—874 13 Claims

A composition of matter is provided suitable for applying a transparent non-fogging coating to a normally fogging transparent or reflecting substrate. The composition typically comprises a highly cross-linked alkylene imine polymer reaction product of the polyalkylene imine with an epoxy substituted carboxylic ester and epihalohydrin.

3,766,300

PROCESS FOR HYDROGENATION OF POLAR COPOLYMERS AND COMPLEXED COPOLYMER COMPOSITIONS

Harold E. De La Mare, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,390
Int. Cl. C08f *15/22;* C08d *5/00*
U.S. Cl. 260—879 5 Claims

A process is provided for the rapid hydrogenation of copolymers prepared from conjugated dienes and certain copolymerizable polar monomers such as vinyl pyridines, acrylonitriles and alpha olefin oxides which comprises an initial step of forming a complex between at least one Lewis acid and the polar portions of the copolymer and thereafter subjecting the complex to hydrogenation. Novel complexed copolymers and their hydrogenated derivatives also are provided.

3,766,301

PREPARATION OF POLYMERS OF INCREASED AVERAGE MOLECULAR WEIGHT FROM MONO-LITHIUM TERMINATED BLOCK COPOLYMERS COUPLED WITH CERTAIN ARYL MONOESTERS

Harold E. De La Mare, El Cerrito, and Charles H. Wilcoxen, Jr., San Lorenzo, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 751,368, Aug. 9, 1968, and Ser. No. 848,324, Aug. 7, 1969. This application May 21, 1971, Ser. No. 145,874
Int. Cl. C08f *19/06, 19/08*
U.S. Cl. 260—879 5 Claims

High coupling efficiency for the production of halogen-free coupled block copolymers is effected by the use as the coupling agent of aryl monoesters which are free from hydrogen substituents in the position alpha to the carboxyl group such as phenyl benzoate.

3,766,302

NOVEL BIS-IMIDE COMPOSITIONS AND POLYMERS THEREFROM

Fred F. Holub, Schenectady, and Carl M. Emerick, Mechanicville, N.Y., assignors to General Electric Company

No Drawing. Original application Apr. 25, 1969, Ser. No. 819,430, now Patent No. 3,651,012. Divided and this application June 3, 1971, Ser. No. 149,802
Int. Cl. C08f *15/06;* C08g *20/20*
U.S. Cl. 260—884 3 Claims

The invention covers novel imide compositions, and coreaction products of the latter with copolymerizable monomers and various polymers and resins. The compositions herein described have many uses including insulation and protective applications as well as being useful in numerous molding applications.

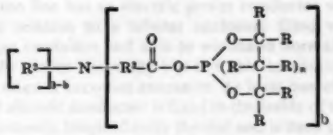
3,766,303

PHOSPHORUS ACID-CARBOXYLIC ACID ANHYDRIDES

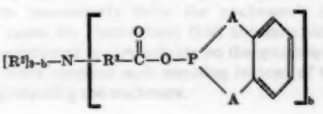
James L. Dever, Lewiston, and James J. Hodan, Williamsville, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Original application July 27, 1966, Ser. No. 568,138, now Patent No. 3,482,002, dated Dec. 2, 1969. Divided and this application Sept. 24, 1969, Ser. No. 871,139
Int. Cl. C07d *105/4;* C08k *1/60*
U.S. Cl. 260—927 R 3 Claims

A compound selected from the group consisting of

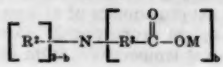


and



wherein R is independently selected from the group consisting of hydrogen and alkyl, R^2 is independently selected from the group consisting of alkyl radicals of 1 to 12 carbon atoms, and aryl radicals of 6 to 18 carbon atoms, R^3 is independently selected from the group consisting of alkylene of 1 to 4 carbon atoms, A is a calcogen independently selected from the group consisting of oxygen and sulfur, *b* is 1 to 3 and *n* is 0 to 1.

The compounds are prepared by reacting under anhydrous conditions a phosphorohalidite with the compound



wherein M is selected from the group consisting of ammonium, alkali metal and alkaline earth metal. The compounds are useful as chemical intermediates, stabilizers, plasticizers, gasoline or lubricating oil additives, or flame retarding additives.

ELECTRICAL

ERRATUM

For Class 264—269 see:
Patent No. 3,766,186

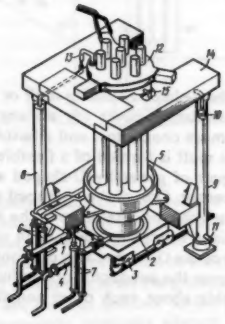
3,766,304

DEVICE FOR COOLING SYSTEMS OF LARGE-CAPACITY ELECTROSLAG REMELTING FURNACES

Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Jury Fedorovich Alferov, bulvar, Lepse, 29, kv. 64; Grigory Bentsionovich Schupak, ulitsa Chudnovskogo, 7, kv. 61; Valery Evgenievich Lanevsky, ulitsa V, Kuchera, 2a, kv. 8; Vitaly Grigorievich Dykan, ulitsa Ushinskogo, 8, kv. 29; Mikhail Elevich Berezovsky, ulitsa Lomonosova, 21/14, kv. 54; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Lev Andreevich Shuruev, ulitsa Gegarina, 10/2, kv. 7; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5, all of Kiev; Kim Moiseevich Khasin, prospect K. Marxa, 35, kv. 17, Novosibirsk; Vladimir Ivanovich Lugovsky, ulitsa Pamirskaya, 48, kv. 70, Novosibirsk; Valery Vasilievich Salmin, ulitsa Zorge, 95, kv. 69, Novosibirsk; Vilen Fedorovich Marjuschenko, ulitsa Televisionaya, 11, kv. 7, Novosibirsk; Fedor Fedorovich Shaburov, ulitsa Rimskogo Korsakova, 4a, kv. 64, Novosibirsk; Georgy Vasilievich Tamozhnikov, ulitsa Vertkovskaya, 14, kv. 4, Novosibirsk; Viktor Andreevich Popov, ulitsa Andreevskaya, 11, kv. 2, Kiev, and Gennady Mikhailovich Semin-Vadov, ulitsa Butyrskaya, 86B, kv. 10, Moscow, all of U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,834
Int. Cl. F27d *1/12*

U.S. Cl. 13—32 **3 Claims**



A device for cooling systems of large-capacity electroslag remelting furnaces in which furnace columns serve as conduits for a coolant fed to an electrode holder and a cross-arm whereas for supplying the coolant to a mold and a base plate use is made of telescopic pipelines.

3,766,305

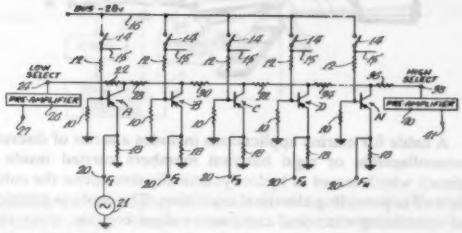
D.C. KEYED HIGH LOW SELECT PREFERENCE SYSTEM FOR POLYPHONIC ELECTRICAL MUSICAL INSTRUMENTS

Ray B. Schrecongost, Park Ridge, Ill., assignor to Hammond Corporation, Deerfield, Ill.

Filed July 17, 1972, Ser. No. 272,437
Int. Cl. G10h *1/02*

U.S. Cl. 84—1.01 **7 Claims**

A transistorized high-low note select system for keyboard type electrical musical instruments which provides for direct current operation with or without control of the attack and decay envelope and supplies the alternating current signals for the highest and/or lowest notes of a group of notes played together respectively to a high note lead or a low note lead or to independent leads for each. Primarily, this is for the purpose of supplying the high note signal of group of keys played simultaneously to be sounded as a solo note, or high and low



notes of an accompaniment chord to be sounded in unison or with frequency division as a pair of bass notes one or two octaves down from a three or four note chord being held on a keyboard for example. The system may also be used to supply the lowest note with frequency division as a single bass note or for similar purposes. The keyboard may be conventional.

3,766,306

ELECTRIC HIGH-VOLTAGE COMPRESSED-GAS-INSULATED POWER TRANSMISSION LINE

Willi Olsen, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 9, 1973, Ser. No. 322,211
Int. Cl. H01b *9/06*

U.S. Cl. 174—16 B **6 Claims**

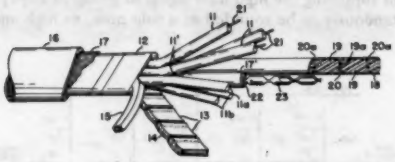
An electric high-voltage compressed-gas-insulated power transmission line has an electric power conductor within and in spaced relation to a tubular enclosure filled with compressed gas insulation and able to withstand normal stressing electrically and/or thermally but not able to withstand such stressing when it becomes excessive. At least one electrically grounded electric conductor is fixed to the inside of this enclosure and extends longitudinally thereof and is itself capable of withstanding such excessive stressing. This grounded conductor projects transversely from the enclosure's inside far enough to cause the electrostatic field normally surrounding the power conductor to concentrate on the grounded conductor so the latter receives such stressing instead of the enclosure, thus protecting the enclosure.

3,766,307

BUOYANT ELECTRICAL CABLES

Daniel E. Andrews, Jr., San Diego, Calif.

Filed Aug. 25, 1972, Ser. No. 284,009
Int. Cl. H01b 7/12
U.S. Cl. 174—47 **19 Claims**



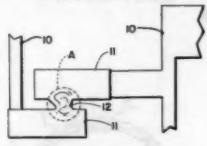
A cable for marine applications includes a series of discrete noncollapsible or rigid buoyant members carried inside a sheath which serves to hydrodynamically streamline the cable as well as providing electrical insulation. The cable in addition to containing electrical conductors does contain other elements such as fiber optics, hydraulic liners and wire or glass ropes. Furthermore, the buoyancy elements are sized to ensure neutral buoyancy and are formed to be relatively noncollapsible to provide the neutrally buoyant capability irrespective of changing ambient pressures.

3,766,308

JOINING CONDUCTIVE ELEMENTS ON MICROELECTRONIC DEVICES

Alberto Loro, Ottawa, Ontario, Canada, assignor to Microsystems International Limited, Montreal, Quebec, Canada

Filed May 25, 1972, Ser. No. 256,929
Int. Cl. H05k 1/10
U.S. Cl. 174—68.5 **21 Claims**



The invention relates to a method of interconnecting adjacent conductors upon a support member, — particularly in a microelectronic device. The portions of the conductors to be connected are provided with nodules or pads of malleable metal which may be deformed and spread into one another to form a cold weld. The invention is particularly useful for the interconnection of conductive tracks on integrated circuit or similar devices.

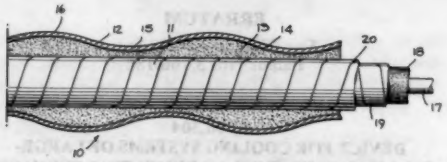
3,766,309

ELECTRIC CABLE WITH CORRUGATED METALLIC SHEATH

Pietro Calzolari, Viale Restelli No. 37, and Sergio Longoni, Via A. Mario, 67, both of Milan, Italy

Filed July 13, 1971, Ser. No. 162,199
Claims priority, application Italy, July 14, 1970, 27395 A/70
Int. Cl. H01b 7/20
U.S. Cl. 174—102 D **4 Claims**

An electric cable having one or more insulated cores surrounded by a corrugated metal sheath and having a tubular covering intermediate the core and the sheath which covering is softer than the core and is deformed by the sheath corrugations which are embedded therein. The covering may be wrapped tapes of crepe paper or expanded foam synthetic resin or a tube of synthetic resin extruded over the core or cores.

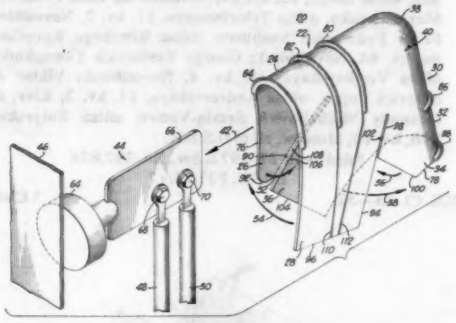


3,766,310

BUSHING COVER

Allen Joseph Paschen, Baraboo, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.

Filed Aug. 11, 1972, Ser. No. 279,937
Int. Cl. H01b 17/00
U.S. Cl. 174—138 F **11 Claims**



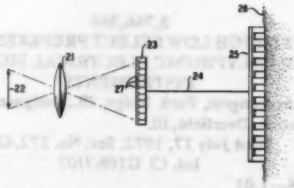
A generally elbow-shaped bushing muff or cover is utilized to provide an insulating cover for an angular connection between one or more conductors and a bushing terminal of a transformer. The muff is formed of a flexible insulating body consisting of a pair of generally U-shaped arm portions extending from a corner. One of the U-shaped arm portions has a bight portion readily mountable over the bushing terminal and has leg portions wrappable about each other and the terminal. The other of the U-shaped arm portions has a bight portion mountable over the conductor or conductors and has leg portions wrappable about each other and the conductor or conductors.

3,766,311

SENSORY SUBSTITUTION SYSTEM

Harry Joseph Boll, 289 River Bend Rd., Berkeley Heights, N.J.

Filed Apr. 26, 1972, Ser. No. 247,567
Int. Cl. H04n 7/18
U.S. Cl. 178—6 **28 Claims**



There is disclosed apparatus for converting electrically-coded information into selective, intelligible, localized cooling

of a receptive heat-producing medium, e.g., a human body. In combination with a vidicon for producing the electrically-coded information, the apparatus enables a blind person to perceive images and motion in the form of distinguishable localized cooling of the skin. In combination wth a microphone, amplifier, and filters for producing the electrically-coded information, the apparatus enables a deaf person to perceive auditory information also in the form of distinguishable localized cooling of the skin. Advantageously, the selective, localized cooling of the skin is achieved by covering a portion of the body with an apertured insulating medium and selectively gating body-produced heat therethrough. In presently preferred embodiments, the selective gating is achieved by a vibrating disc driven by a vibrating reed which, in turn, is driven by a piezoelectric element.

3,766,312

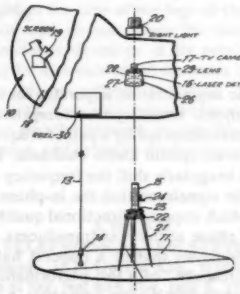
AERIAL SURVEY

Frederick C. McConnell; George Jason, and Neil J. Armstrong, all of Calgary, Alberta, Canada, assignors to Spartan Air Services Limited, Ottawa, Ontario, Canada

Division of Ser. No. 65,259, Aug. 19, 1970, Pat. No. 3,709,607, which is a continuation of Ser. No. 817,448, April 18, 1969, abandoned. This application Aug. 11, 1972, Ser. No. 279,792

Int. Cl. G01b *11/26*

U.S. Cl. 178—6.8 **17 Claims**



A target positioning device has a closed circuit television system on a helicopter, the system having a camera arranged to view the terrain below the helicopter and a viewing console for displaying an image of the terrain to the pilot. A laser and a laser detector of which one is on the ground and the other on the helicopter, are used to indicate to the pilot whether the helicopter is accurately vertically aligned with a predetermined point on the terrain.

3,766,313

CIRCUIT FOR TRANSMITTING DIGITAL SIGNALS TO CONVENTIONAL TELEVISION RECEIVER

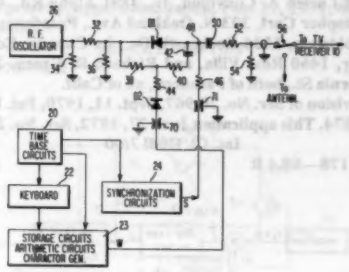
David John Carlson, and John Barrett George, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,264

Int. Cl. H03c *1/14*; G06f *3/14*; H04n *5/40*

U.S. Cl. 178—7.2 **6 Claims**

A desk top calculator or other generator of digitized video signals is coupled to the antenna terminals of a conventional television receiver. A circuit within the generator translates the digitized video signals into a modulated TV R-F picture carrier. The circuit includes a radio-frequency source, and a network of diode switchable attenuators. The latter are operated in response to control signals for switching the radio-frequency signal between three discrete levels. Two of the



levels are for the display of black and white, respectively, and the third level is a "blacker than black" synchronization level.

3,766,314

STABILIZED LOW VOLTAGE SUPPLY CIRCUIT IN SOLID-STATE T.V. RECEIVERS

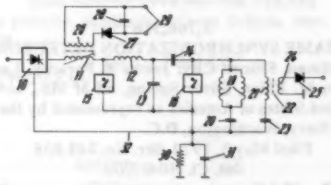
Werner Riechmann, Sibbesse, Germany, assignor to Blaupunkt-Werke GmbH, Hildesheim, Germany

Filed Apr. 3, 1972, Ser. No. 240,473

Claims priority, application Germany, Apr. 2, 1971, P 21 16 167.1

Int. Cl. H04n *3/18*

U.S. Cl. 178—7.3 R **5 Claims**



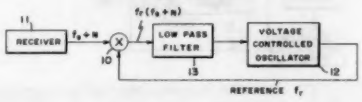
To obtain stabilized low voltage from the horizontal deflection circuit of a T.V. receiver, an additional winding is inductively coupled to the charging inductance in the horizontal deflection circuit, and a rectifier circuit is connected to the additional winding to be responsive to peak voltage value across the additional winding and supply the low voltage. The inductivity of the inductance is of such value that a voltage maximum appears at the inductance during the energy supply interval which is independent of changes in loading on the horizontal deflection circuit, for example by adjusting the inductivity that the peak value thereacross is reached within the first two thirds of the energy supply interval, that is, during line trace; a parallel R-C network can be connected into the horizontal deflection circuit so that, when the voltage thereacross exceeds a predetermined level, the excess voltage can be sensed to disconnect the controllable rectifier of the deflection circuit and inhibit further application of power to the inductance upon sensing of an excess voltage level.

3,766,315

METHOD AND APPARATUS FOR A SINGLE CHANNEL DIGITAL COMMUNICATIONS SYSTEM

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of Lucien A. Couvillon, Jr., 1891 Alpha Rd., Glendale; Christopher Carl, 303 N. Oakland Ave., Pasadena; Richard M. Goldstein, 5534 Rockcastle Dr., La Canada; Edward C. Posner, 1460 Rose Villa, and Richard R. Green, 252-D E. California St., both of Pasadena, all of Calif.

Division of Ser. No. 70,967, Sept. 11, 1970, Pat. No. 3,701,874. This application June 27, 1972, Ser. No. 266,822
Int. Cl. H04l 7/00
U.S. Cl. 178—69.4 R 8 Claims



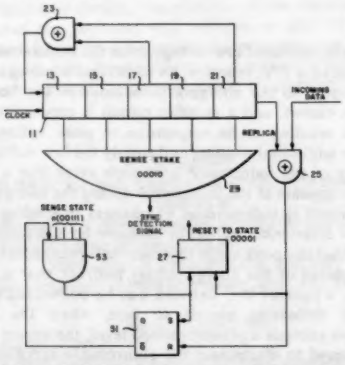
A method and apparatus is disclosed for synchronization of a received PCM communications signal, without requiring a separate synchronization channel, by digital correlation of the received signal with a reference signal, first with its unmodulated subcarrier and then with a "bit sync" code modulated subcarrier, where the code sequence length is equal in duration to each data bit. The received signal includes a prefix consisting of a period of unmodulated subcarrier followed by a period of "bit sync" code modulated subcarrier. The phase of the reference signal is adjusted in accordance with the subcarrier correlation peak, and then in accordance with the bit correlation peak. The correlator comprises a shift register and an adder-subtractor the function of which is controlled by first the unmodulated reference signal, and then the "bit sync" code modulated reference signal. Once subcarrier and bit synchronization are achieved, data detection is initiated. To increase the center of the passband of the subcarrier, two "bit sync" code modulations may be provided, the first with a high frequency "bit sync" code which repeats a fixed number of times per data bit cycle for preliminary synchronization. Following that, the period of regular "bit sync" code modulation is employed for bit synchronization.

3,766,316

FRAME SYNCHRONIZATION DETECTOR

Eric J. Hoffman, Ellicott City; James A. Perschy, Laurel, and Benjamin M. Elder, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1972, Ser. No. 249,836
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R 13 Claims



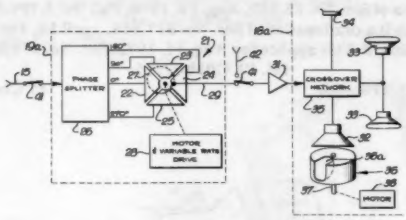
Long strings of digital data are preceded by a frame sync pattern or "Barker" word. The Barker word is fixed and known to the receiver and the appearance of the Barker word enables the receiver to mark the beginning of a frame. The difficulty of detection of the sync pattern is compounded when the data has a bit error rate and when the sync word is transmitted amidst random data. Detecting the frame sync pattern is a problem of cross-correlation of the data stream with a stored replica of the Barker word sync pattern. This device is a detector for accurate frame sync detection using a minimum quantity of hardware and significantly simplifying frame sync pattern detectors.

3,766,317

QUADRAPHONIC AUGMENTATION SYSTEM

Donald R. Sauvey, La Canada, and Paul H. Sharp, Sierra Madre, both of Calif., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,845
Int. Cl. H04r 5/04
U.S. Cl. 179—1 GQ 2 Claims



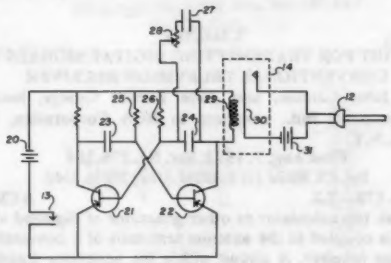
A quadraphonic augmentation apparatus for use with a conventional stereophonic sound system comprises two rear accoustic transducers connected by a pair of frequency changing devices to the stereo system audio channels. The frequency changing devices irregularly shift the frequency and hence the phase of the audio signals, so that the in-phase left and right channel signals which impart a directional quality to the stereo sound are out of phase at the rear transducers. The resultant sound pattern resembles that of a concert hall, remarkably simulating the "presence" of a live performance. Preferably, each frequency changing device comprises a phase splitter driving a multi-segmented rotary capacitor having an eccentric pick-up plate driven at a varying rate. Each rear accoustic transducer may include a rotary drum to create additional phase shift effects in the low frequency range.

3,766,318

ELECTRONIC VOICE BOX APPARATUS

Howard A. Webb, Austin, Tex., assignor to Mary E. Morris, Austin, Tex., a part interest

Filed Apr. 19, 1971, Ser. No. 135,155
Int. Cl. A61f 1/20; G10l 1/10
U.S. Cl. 179—1 AL 1 Claim



A compact, hand held multivibrator activated artificial larynx to provide artificial voices of improved naturalness and

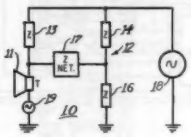
intelligibility for patients having laryngectomy operations. Said artificial voice box being provided with push to talk switch means for intermittent operation, requiring only one hand to operate and use and adapted to produce a range of adjustable tones for loud and more natural voice reproduction.

3,766,319

TRANSDUCER CIRCUIT FOR SIMULTANEOUS TWO WAY OPERATION

Eric Gschwandtner, 75 Oakbrook Dr., Apt. G, Williamsville, N.Y.

Filed Feb. 22, 1972, Ser. No. 228,181
Int. Cl. H04m 1/00
U.S. Cl. 179—1 HF **7 Claims**



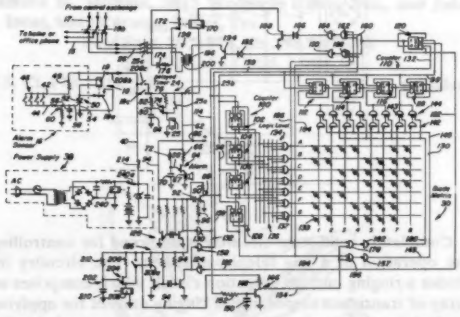
Disclosed is a transducer circuit arrangement which allows a transducer element to be operated simultaneously in both a sending mode and a receiving mode. The transducer element forms one impedance leg of a bridge network and is in a sending mode with the signal energizing the bridge. The circuit connected between the taps of the legs of the bridge network comprise a balanced circuit means for detection of signals which the transducer develops in its receiving mode. The transducer may be a device which operates both as a speaker and as a microphone without switching between the two modes of operation. Two such transducers may be used either in series or in a parallel network to simplify the balancing of the bridge network and broaden the frequency response of the circuit.

3,766,320

TELEPHONE ALARM SYSTEM

Truman K. Homme, 1524 Gorton Ave., Willmar, Minn.

Continuation of Ser. No. 839,864, July 8, 1969, abandoned. This application Sept. 16, 1971, Ser. No. 181,189
Int. Cl. H04m 11/04
U.S. Cl. 179—5 R **10 Claims**



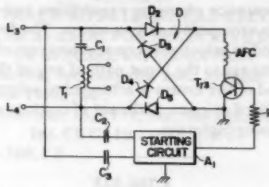
A solid state electronic system for sensing an emergency condition at a subscriber station and generating multiple coded signals impressed on telephone lines. A first code sequence which connects the subscriber station is located to a service headquarters. The second code sequence indentifies the location of the subscriber station thereby providing the service headquarters with sufficient information to respond. The codes are generated by an encoder utilizing a switching matrix controlled by logic circuitry for forming pulses compatible with telephone system data format.

3,766,321

INPUT CIRCUIT FOR AN AUTOMATIC TELEPHONE ANSWERING DEVICE

Takashi Sato, No. 14-8 Matsuba-cho, Tokorozawa, Japan

Filed Feb. 24, 1972, Ser. No. 228,881
Claims priority, application Japan, Feb. 27, 1971, 46/11706 (utility model)
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **4 Claims**



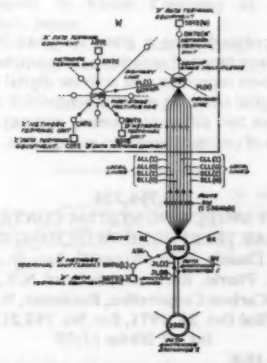
An input circuit for an automatic telephone answering device includes a first series circuit, connected between telephone lines, of a DC current blocking circuit and a connecting circuit, such as a transformer, for receiving signals from telephone lines and transmitting signals from the answering device. A rectifier circuit is connected with the first series circuit in parallel. A second series circuit is connected with the rectifier circuit and consists of a contactless or electronic switching device, such as a transistor, and an AC current blocking circuit. A starting circuit is connected between the telephone lines for switching the switching device to an ON state after receiving an incoming calling signal, thereby making it possible to close the DC loop of the telephone lines through the contactless switching device.

3,766,322

DATA SWITCHING EXCHANGES

Robin Henry Moffett, Maidenhead; Peter William Smith, Hillingdon, both of England, and Christopher Charles Vonwiller, New South Wales, Australia, assignors to Plessy Handel und Investments A.G., Gartenstrasse, Switzerland

Filed Nov. 18, 1971, Ser. No. 199,956
Claims priority, application Great Britain, Nov. 21, 1970, 55,486/70
Int. Cl. H04j 3/00
U.S. Cl. 179—15 BV **13 Claims**



A data-switching exchange is provided which serves on a two-way transmission basis a plurality of data-rate categories of subscribers' stations in which the switching area includes incoming and outgoing highways arranged in groups with one in-

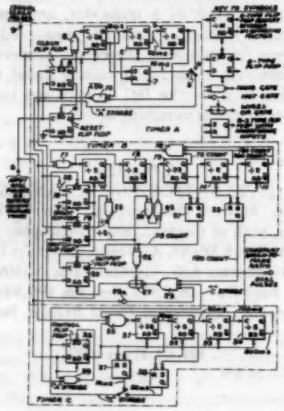
coming group comprising a plurality of highways and one outgoing group comprising the same number of highways being appropriate to each category of subscribers' stations. In respect of a particular category of subscribers' stations each incoming highway and a corresponding outgoing highway handle information in respect of the same plurality of subscribers' stations on a character-interleaved time-division multiplexed basis in the same synchronous multiplex time-slot-appearance order and circuit switched interconnected between stations of the particular data-rate category is provided by the utilisation of one of a particular set of so-called cords having character time-slot-appearance changing capabilities and the operation of appropriate crosspoints of two arrays. The first of these arrays is arranged to selectively connect any one of said group of incoming highways to the input path of any of the set of cords and the second of the arrays is arranged to selectively connect the output path of any one of the set of cords to any one of the group of outgoing highways.

3,766,323

DIGITAL DIAL PULSE DISTORTION CORRECTOR

John P. Wittman, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 24, 1971, Ser. No. 118,250
Int. Cl. H04q *1/36*; H04b *3/36*
U.S. Cl. 179—16 E **8 Claims**



Input dial pulses having a given range of break-to-make ratios and a given range of repetition rates and local clock pulses having a given repetition rate activate digital logic circuitry including a digital counting arrangement which is controllably shifted between two different counting rates to generate output dial pulses of constant break-to-make ratios.

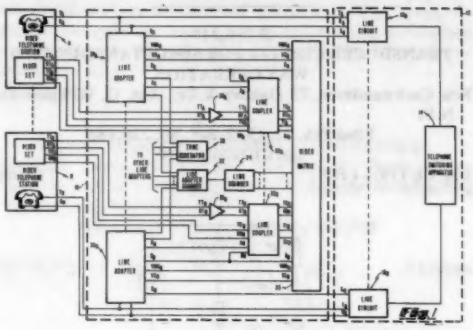
3,766,324

AUXILIARY SWITCHING SYSTEM CONTROLLED BY REGULAR TELEPHONE SWITCHING SYSTEM

Ignas Budrys, Lincoln, Nebr.; Ernest O. Lee, Jr., Fairport, and William W. Pharis, Rochester, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,212
Int. Cl. H04m *11/00*
U.S. Cl. 179—18 E **12 Claims**

In combination with a regular telephone switching system for establishing a first electrical path, such as an audio path, between any two stations in a plurality of stations, an auxiliary switching system is provided for establishing between the two stations a second independent electrical path suitable, for instance, for video transmission and reception. After the establishment of the first electrical path, signals received via the first path through the regular telephone switching system are used in the auxiliary switching system to generate mark



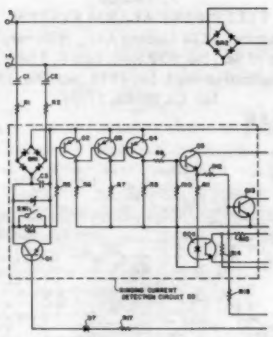
signals which identify the two stations to be interconnected via the second path. Switching means are provided to complete the interconnection between the two stations in response to the mark signals.

3,766,325

CONTROL CIRCUITS FOR KEY TELEPHONE SYSTEM

William C. Hatfield, and John M. Reed, both of Dallas, Tex., assignors to Lordel Manufacturing Company, Monrovia, Calif.

Continuation-in-part of Ser. No. 158,790, July 1, 1971, abandoned. This application Sept. 13, 1971, Ser. No. 179,839
Int. Cl. H04m *3/02*
U.S. Cl. 179—84 A **15 Claims**

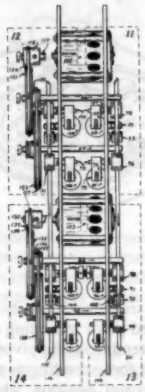


Completely solid-state circuitry is disclosed for controlling the operation of a key telephone system. The circuitry includes a ringing current detection circuit which comprises an array of transistors responsive to ringing current for applying control signals to a plurality of current supply control circuits. The circuitry also includes an in-use circuit and a holding circuit responsive respectively to an off-hook indication and a holding signal for applying control signals to other current supply control circuits. The current supply control circuits, each of which includes a transistor and full-wave diode bridge rectifier, control the application of current from various current supplies to various loads such as the key telephone set ringer, line lamp, etc. The holding circuit includes optically coupled isolators for isolating the line voltage from the detection and current supply circuits.

3,766,326
DUAL RECORDING AND REPRODUCING APPARATUS HAVING TWO ENDLESS TAPES AND COMMON DRIVE MEANS

James J. Buchholz, 2411 Euston Road, Winter Park, and Edward E. Peyton, 220 Glen Oaks Avenue #102 Temple Terrace, Tampa, both of Fla.

Filed Aug. 9, 1971, Ser. No. 169,913
Int. Cl. G11b *15/02, 5/48*
U.S. Cl. 179—100.2 Z 12 Claims

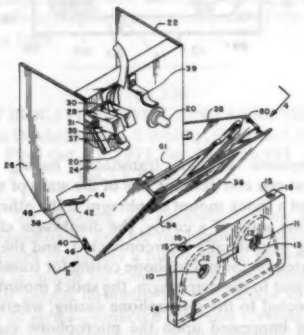


An endless tape recording and reproducing apparatus is provided having a pair of remote dictating units and a pair of remote transcribe units adapted to actuate an integrated dual endless tape unit. Each endless tape has a separate bin along with its own dictate and transcribe controls but each is driven by the same motors driving forward and reverse shafts for each side, and each dictate station and each transcribe station can operate either of the endless tapes. The apparatus utilizes a combination erase magnet adapted to operate a reed switch to provide two functions for the erase magnet and utilizes photo cells to indicate conditions of the endless tape. A new system for adjusting solenoid actuated pinch rollers is also provided along with a new layout path for each endless tape.

3,766,327
TAPE CASSETTE HOLDING AND POSITIONING UNIT

Richard M. Johnson, 3815 Weeburn, Dallas, Tex., and John Jones, 6043 Caracas, Dallas, Tex.

Filed Sept. 23, 1971, Ser. No. 189,466
Int. Cl. G11b *15/06, 23/08*
U.S. Cl. 179—100.2 Z 6 Claims

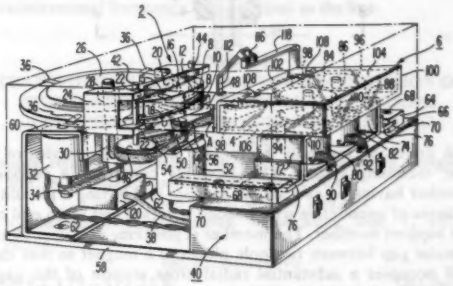


A tape cassette unit includes a frame and a housing movably mounted on the frame for holding the cassette. The housing is movable between an open or loading position for receiving the cassette and a closed or operating position for enabling recording on and reading from the cassette tape. A recording head is rigidly mounted in the housing so as to engage the cassette tape when the cassette is inserted in the housing. The tape unit also includes a switch for automatically initiating operation of the unit when the housing with the cassette properly positioned therein, is moved into operating position.

3,766,328
SLANT TRACK ROTATING HEAD RECORDER-REPRODUCER SYSTEM FOR SELECTIVE RETENTION OF SPECIAL INFORMATION

Henry Ray Warren, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,255
Int. Cl. G11b *15/02, 23/06*
U.S. Cl. 179—100.2 T 4 Claims

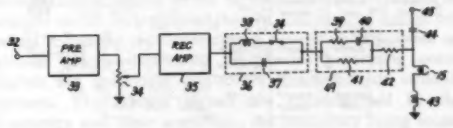


A system for recording and selectively playing back, repeatedly if desired, a portion of interest of continuously monitored information of given duration. Signal erasing means are scanned in precedent relation to scanned signal transducing means for cooperation with an endless loop recording medium to continuously update information stored for selective playback.

3,766,329
DEVICE FOR CUTTING OFF THE SIGNAL IN A RECORDING TAPE RECORDER AT THE END OF RECORDING

Shigeo Katoh, Asahi-ku, Yokohama City, Kanagawa-ken, Japan, assignor to Victor Company of Japan Ltd., Kanagawa-ken, Japan

Filed May 24, 1972, Ser. No. 256,513
Claims priority, application Japan, May 25, 1971, 46/43098 (utility model)
Int. Cl. G11b *15/12*
U.S. Cl. 179—100.2 R 4 Claims

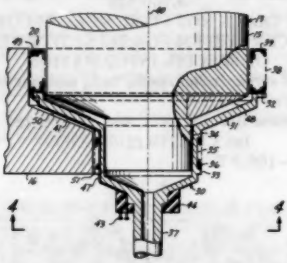


A device for cutting off a recording signal at the end of a recording operation in a cartridge type tape recorder, which device operates at the time of stopping of a recording operation to cause a variation in the frequency characteristic of a trap circuit for trapping a high-frequency bias and inserted in a recording signal transmission path, thereby to cut off the recording signal.

3,766,330
DISC RECORDING STYLUS DRIVER

Otto F. Hepp, Los Angeles, and John P. Jarvis, Northridge, both of Calif., assignors to Aero Service Corporation, Philadelphia, Pa.

Filed Apr. 28, 1972, Ser. No. 248,542
Int. Cl. G11b 3/00; H04r 9/16
U.S. Cl. 179—100.4 C 10 Claims

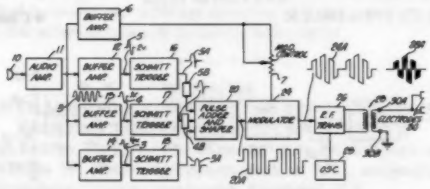


A drive coil assembly is provided for driving a stylus of a disc recording system. The assembly comprises a support member having an axis and an annular coil having a plurality of turns of conductive wire bonded together and to an end of the support member. The member is positioned relative to an annular gap between two pole pieces of a magnet so that the coil occupies a substantial radial cross section of the gap. Preferably, the member includes an end flange to which the coil is attached. The coil is formed on a removable mandrel, or the like, so that the resulting drive coil assembly has a structure which does not include a bobbin.

3,766,331
HEARING AID FOR PRODUCING SENSATIONS IN THE BRAIN

Henry R. Zink, San Bernardino, Calif., assignor to ZCM Limited, San Bernardino, Calif.

Continuation-in-part of Ser. No. 847,292, Aug. 4, 1969, abandoned. This application Nov. 24, 1971, Ser. No. 201,831
Int. Cl. H04r 25/00
U.S. Cl. 179—107 R 19 Claims

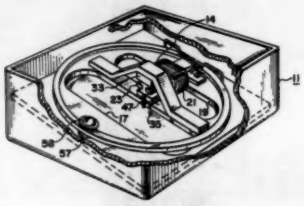


A pulsed oscillator or transmitter supplies energy to a pair of insulated electrodes mounted on a person's neck. The transmitter produces pulses of intensity greater than a predetermined threshold value and of a width and rate so as to produce the sensation of hearing without use of the auditory canal thereby providing a hearing system enabling otherwise deaf people to hear.

3,766,332
ELECTROACOUSTIC TRANSDUCER

Elmer Victor Carlson, Prospect Heights, and August F. Mostardo, Jr., Norridge, both of Ill., assignors to Industrial Research Products, Inc., Elk Grove Village, Ill.

Filed May 17, 1971, Ser. No. 144,019
Int. Cl. H04r 11/02
U.S. Cl. 179—114 A 4 Claims

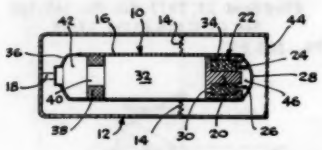


An electroacoustic transducer of the magnetic-armature type including improved pivot mounting means for the armature. Elongated legs extend from the pivot end of the armature and provide a torsional force tending to restore the armature to its balanced or neutral position when the armature is vibrated.

3,766,333
SHOCK INSENSITIVE TRANSDUCER

Alan Reed Watson, Niles, Mich., assignor to Electro-Voice Incorporated, Berrien, Mich.

Filed June 15, 1972, Ser. No. 263,260
Int. Cl. H04m 1/04; H04r 9/00
U.S. Cl. 179—115.5 R 10 Claims

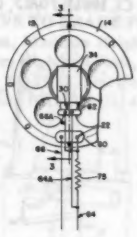


A microphone with a transducer having a vibratal diaphragm at one end defining one of the walls of a diaphragm chamber and a shock mount diaphragm at the other end defining one of the walls of a cavity, the diaphragm chamber and cavity being acoustically interconnected, and the transducer being mounted on the microphone casing for translation along the axis normal to the diaphragm, the shock mount diaphragm being connected to the microphone casing, whereby a shock or vibration impressed upon the microphone casing with a component normal to the diaphragm changes the size of the cavity to produce a pressure which is transmitted to the diaphragm cavity to oppose inertial deflection of the diaphragm responsive to the shock or vibration.

3,766,334
DOUBLE VOICE COIL LOUDSPEAKER

Ambrose D. Burke, North Scituate, R.I.

Filed Nov. 15, 1971, Ser. No. 198,873
Int. Cl. H04r 9/06
U.S. Cl. 179—115.5 DV 3 Claims

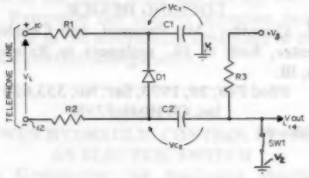


The present invention relates to sound reproducers or loudspeakers of the electro-dynamic or moving-coil type and to a new series-parallel circuit provided with resistance to increase the cycle range and improve the timbre of the sound.

3,766,335
TELEPHONE LINE VOLTAGE SENSING CIRCUIT

Fred McColl Longstaff, Islington, and John Malcolm Petrie, Rexdale, both of Canada, assignors to ESE Limited, Rexdale Ontario, Canada

Filed Aug. 3, 1972, Ser. No. 277,579
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 10 Claims



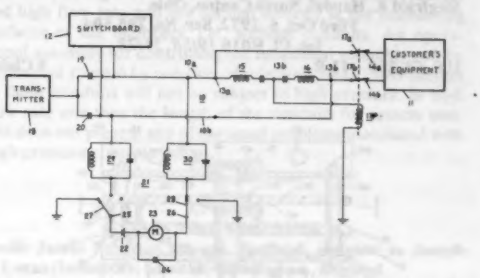
The voltage between telephone wires is used to produce and reverse voltage across a diode, each end of the diode is connected through a condenser to a voltage reference. One of the voltage references is replaced for a short period by a voltage which will cause conduction through a diode. The point at which conduction commences is a measure of the voltage on the telephone lines.

3,766,336
CIRCUIT ISOLATING SWITCHING ARRANGEMENT

Ilmar Veikko Wikholm, R.R. 2 Whitby, Ontario, Canada

Filed Oct. 12, 1972, Ser. No. 296,981
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 4 Claims

A circuit for isolating an equipment from a balanced telephone transmission line for the purpose of testing the line for ground faults comprises a four-terminal network having a pair of input terminals for connection to the transmission line and a pair of output terminals for connection to the equipment, a pair of series-connected elements forming a potential divider connected between said input terminals, each of said elements comprising a series-tuned circuit tuned to a predetermined frequency which is higher than the maximum frequency normally to be transmitted by the line, a pair of normally closed relay contacts connected between said input terminals and output terminals, and relay operating means connected between the midpoint of the potential divider and

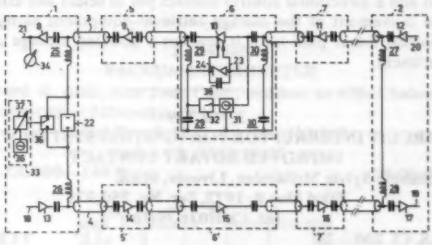


ground for opening said contacts in response to a signal at said predetermined frequency being applied to the line.

3,766,337
TRANSMISSION SYSTEM FOR THE TRANSMISSION OF SIGNALS BETWEEN TWO TERMINAL STATIONS THROUGH A TRANSMISSION LINE INCLUDING REPEATER STATIONS

Jasper Hendrik Duimelaar, Hilversum, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed May 5, 1972, Ser. No. 250,681
Claims priority, application Netherlands, Dec. 7, 1971, 7105347
Int. Cl. H04b 3/46
U.S. Cl. 179—175.31 R 10 Claims



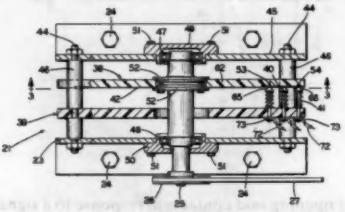
The invention relates to a transmission system for information signals sent between two terminal stations of a carrier telephone system having repeater stations. Each repeater station is provided with a line amplifier which is bridged for direct current supply by a direct current supply bypass circuit. A measuring oscillator circuit connected to the input of the line repeater for checking the connections between the two terminal stations and is activated and deactivated by an oscillator switching device which is controlled through the transmission line from one of the terminal stations by means of a control circuit incorporated therein. This control circuit comprises a control oscillator circuit having an adjustable amplitude control connected thereto for generating control signals for individual control of the oscillator switching devices. The control signals are characterized by their frequency and their amplitude; the frequency being located below the transmission band. These control signals are transmitted through the direct current supply bypass circuits to the oscillator switching devices while bypassing the line amplifiers. These switching devices are furthermore provided with a cascade arrangement of a frequency selective circuit and an amplitude measuring device for activating the relevant measuring oscillator circuit if the amplitude of the control signal applied through the selective circuit to the amplitude measuring device corresponds to the amplitude adjustment of the amplitude measuring device.

3,766,338

ROTARY SWITCH FOR CONTROLLING LINEAR MOTION

Siegfried K. Handel, North Canton, Ohio

Filed Oct. 6, 1972, Ser. No. 295,504
Int. Cl. H01h *19/58, 21/78*
U.S. Cl. 200—11 R 5 Claims



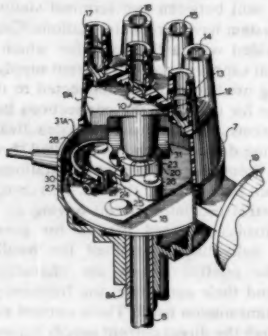
A rotary switch for use with storage retrieval equipment which travels linearly along a plurality of storage compartments for placement and removal of material therein. A rotatable commutator disc is mounted on a central shaft adjacent a fixed stator member. The shaft is coupled to the storage retrieval equipment for synchronous movement therewith. A plurality of contact pins corresponding to the number of storage positions, and a pair of directional control contact pins are mounted on the stator member and engage the commutator disc. A pair of arcuate conductive segments are formed on the commutator disc and engage the stator contact pins to establish an electrical circuit path across one of the conductive segments between a selected position contact pin and a directional control contact pin to select and control the movement of the storage retrieval equipment along the shortest linear path until it reaches a selected storage compartment.

3,766,339

CIRCUIT INTERRUPTOR FOR IGNITION SYSTEM WITH IMPROVED ROTARY CONTACT

Elizabeth Sylvia Melidosian, Livonia, Mich.

Filed May 8, 1972, Ser. No. 250,975
Int. Cl. H01r *39/18*
U.S. Cl. 200—24 7 Claims



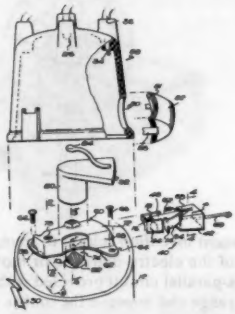
A segmented cylindrical conductive member, comprising an integrated, concentric, part of the distributor shaft, positioned intermediate the ends of the shaft and having wiping contact elements, one of which is connected to the primary power source and the other to ground.

3,766,340

ELECTRICAL CONTACT BREAKER APPARATUS FOR SPARK IGNITION INTERNAL COMBUSTION ENGINES

Brian Richards, 38 Towngate, Newsome, Huddersfield, Yorkshire, England

Filed June 12, 1972, Ser. No. 261,713
Claims priority, application Great Britain, June 16, 1971, 28157/71; Nov. 27, 1971, 55167/71
Int. Cl. H01h *19/62, 9/08*
U.S. Cl. 200—30 A 12 Claims



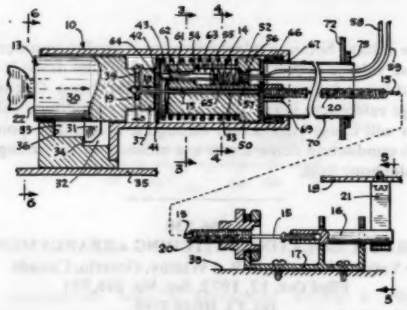
The invention is concerned with Electrical contact breaker apparatus for spark ignition internal combustion engines, the apparatus including a set of electrical contact points and a follower member for contacting a cam rotatably mounted in an electrical distributor for opening and closing said contact points, the electrical contact points and the follower being incorporated in a replaceable cartridge adapted for slide mounting in the distributor.

3,766,341

LOCKING DEVICE

Kenneth L. Guenther, Mt. Prospect, and Charles P. Barcik, Westchester, both of Ill., assignors to Ramm Industries, Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,623
Int. Cl. H01h *27/00*
U.S. Cl. 200—44 3 Claims



A locking device for the electrical ignition system and the hood of a motor vehicle which has a reciprocable tumbler member slidable longitudinally in a housing section mounted within the passenger compartment of the vehicle with a flexible control member extending from the tumbler to a hood latch pin for moving the latch pin into and out of locking engagement with a hook member secured to the underside of the vehicle hood within the motor compartment, and the tumbler member adapted to be moved into and out of operating engagement with an electrical switch means which is adapted to

electrically ground the electrical ignition system of the motor when the tumbler is in a forwardly hood locking position. The locking device preferably includes a "fail safe" connection between the switch means and the ignition system which prevents the motor being started when all of the electrical connections between the switch means and the ignition system are severed.

3,766,342

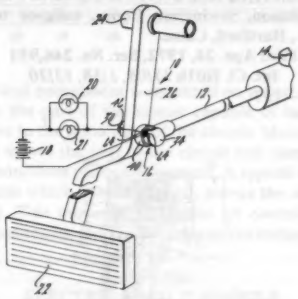
SWITCH RESPONSIVE TO BRAKE PEDAL MOVEMENT

Joachim P. Stadelmann, Madison Heights, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 26, 1972, Ser. No. 257,218

Int. Cl. H01h *3/14*

U.S. Cl. 200—61.89 **8 Claims**



A pressure responsive switch inserted in the linkage of a vehicle braking system for responding only to the actual pressure required to initiate braking. The switch mechanism is self adjusting to its actuating means and is unaffected by the subsequent wear of the brake lining and linkage over the life of the vehicle. Extremely fast contact operation and reliability are possible due to the mechanical advantage of the actuator lever ratio and contact configuration.

3,766,343

HIGH POWER HYDRAULIC CONTROL SYSTEMS FOR AN ELECTRIC SWITCH

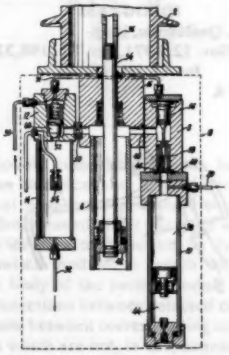
Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, Neuilly-sur-Seine, France

Filed Nov. 11, 1971, Ser. No. 197,809

Claims priority, application France, Nov. 23, 1970, 7041926

Int. Cl. H01h *35/38*, *33/34*

U.S. Cl. 200—82 B **3 Claims**



The invention relates to hydraulic control systems for operating movable members, particularly of electric switches, which require large instantaneous forces. A functional assembly includes power members such as an hydraulic jack, inlet and purge valves, and a high pressure oil source. The hydraulic linkages of this assembly are subject to high pressure and high flow rate and are formed directly in the connecting surfaces of the members, i.e., without conduits. An operational assembly for controlling the functional assembly can be connected thereto by conduits of relatively small cross-section as these conduits will not be subject to high pressure, or high flow rate and thus the length of the conduits for remote control does not present any of the usual problems associated with high pressure control systems.

3,766,344

ELECTRIC SWITCHES

Leslie James Nevett, Clitheroe, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 3, 1972, Ser. No. 240,753

Claims priority, application Great Britain, Apr. 13, 1971, 9,267/71

Int. Cl. H01h *3/14*

U.S. Cl. 200—85 A **13 Claims**

An electric switch, for incorporation in a seat which includes an elastically extensible web on which a weight on the seat is supported, includes contacts on the web engageable with contacts on a relatively fixed part of the seat, whereby stretching of the web by a weight on the seat operates the switch.

3,766,345

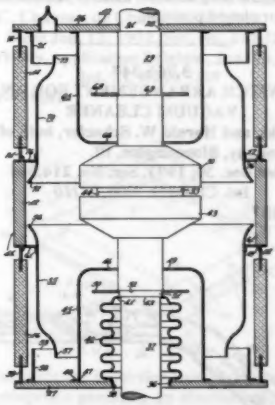
VACUUM INTERRUPTER

Edward A. Attia, San Jose, Calif., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 5, 1972, Ser. No. 312,383

Int. Cl. H01h *33/36*

U.S. Cl. 200—144 B **12 Claims**



A vacuum interrupter having a heavy heat sink at the area of arcing to promote more efficient heat dissipation is provided. End insulator members disposed on each side of the heat sink are connected to end cap plates to provide a vacuum envelope. A pair of insulator shielding members which are electrically isolated from the interrupter contacts and from ground afford full insulator protection from arc products. A bellows shield and a complementary symmetry shield are con-

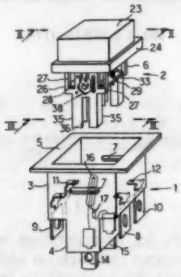
nected to the end plates which also serve to promote heat dissipation and to protect the respective contact rods from an accumulation of arc products thereon. The mechanical bellows which operates to seal the envelope and still allow axial movement of a contact rod is fully protected by the bellows shield so that arc products cannot accumulate or condense on the deflectable bellows so that the mechanical efficiency of the sealing bellows is maintained during the life of the interrupter.

3,766,346

ALTERNATE ACTION MECHANISM WITH PLATE AND DUAL PIN LATCHING MEANS

Percy P. Alexander, Impasse Perrin de Gonzaque, Nevers, France

Filed Mar. 28, 1972, Ser. No. 238,778
Int. Cl. H01h *13/56*
U.S. Cl. 200—153 J **5 Claims**



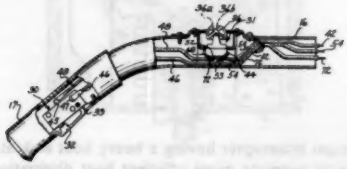
A switch of the type comprising a push button provided with moving contacts and slidably mounted in a fixed casing supporting terminals connected respectively to the phases of a source of power and an appliance, the said contacts being able to come into contact with said terminals to establish the connection between the supply and the appliance when the push button is depressed a first time against the action of resilient return means, so as to move away from the fixed terminals, thus cutting the connection when the push button is depressed a second time and so on, and a locking member being interposed between at least one wall of the push button and an adjoining wall of the casing so as to be able to lock the push button in an open or closed position.

3,766,347

CONTROL SWITCH ARRANGEMENT FOR AN UPRIGHT VACUUM CLEANER

Joseph F. Brooks, and Harold W. Schaefer, both of c/o Eureka Williams Company, Bloomington, Ill.

Filed Dec. 30, 1971, Ser. No. 214,301
Int. Cl. H01h *9/06, 21/10*
U.S. Cl. 200—157 **3 Claims**



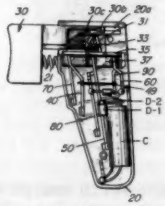
A control switch arrangement for controlling the operation of an upright vacuum cleaner during on-the-floor and off-the-floor cleaning. An elongated handle is pivotally connected to the body of the cleaner, and a power switch is mounted in the grip of the handle for controlling the operation of the fan drive motor. The power switch has an actuating lever which projects through an opening in the grip and which serves to close the power switch when a user grasps the grip. A combination motor speed control and bypass switch is also mounted on the handle in circuit with the fan drive motor. The speed control switch permits the fan to run at two different speeds when the cleaner is set up for on-the-floor cleaning, and at a speed suited for off-the-floor cleaning when the cleaner is set up for this mode of operation. When the speed control switch is in its off-the-floor cleaning position, the power switch is bypassed.

3,766,348

TWO PART CASING FOR TRIGGER SWITCH WITH ONE PART MOUNTING ALL SWITCH CONTACT MEMBERS

David W. Johnson, Newington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Apr. 24, 1972, Ser. No. 246,951
Int. Cl. H01h *13/08, 1/58, 13/30*
U.S. Cl. 200—157 **7 Claims**



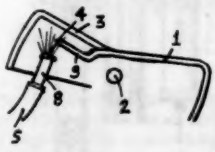
The parts of an electric switch are contained within a two-part insulating casing in which a trigger member slides and operates an over-center mechanism to impart a snap action movement to a yoke which causes a movable contact carrier to operate bridging contacts. Sets of fixed contacts are engaged and disengaged by different bridging contacts with one bridging contact always remaining in contact with one fixed contact of its set. The fixed contacts are stamped from sheet metal and are mounted edgewise in separate slots in the casing. All of said fixed and bridging contact members are mounted in one of said casing parts.

3,766,349

PUSHBUTTON SWITCH, PROVIDED WITH A LIGHTED IDEOGRAM

Giuseppe Codrino, Quattordio, Italy

Filed Nov. 12, 1971, Ser. No. 198,329
Int. Cl. H01h *9/16*
U.S. Cl. 200—167 A **2 Claims**

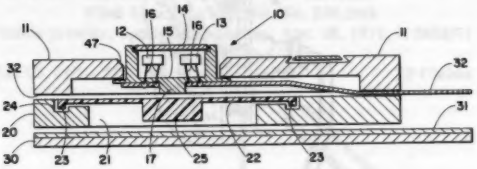


A pushbutton switch comprising a pushbutton, pivoted about an axis and provided, on one of its portions, with an ideogram, which is lighted on its inner surface by a light beam emitted from the terminal of a light guiding cable.

3,766,350
MOUNTING OF A LIGHT EMITTING DEVICE ON A CIRCUIT

Robert Maarten Van Dyk, Dunrobin, and Peter Francis Maheux, Kanata, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Mar. 15, 1972, Ser. No. 234,845
Int. Cl. H01h 9/16
U.S. Cl. 200—167 A 5 Claims

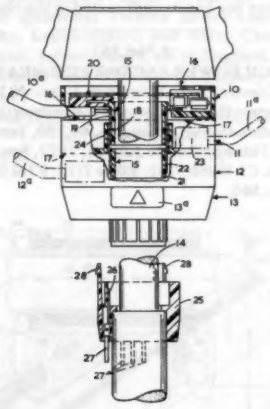


An electrical component is mounted on a part of a flexible circuit with the part of the circuit capable of limited movement relative to the remainder of the circuit. Movement of the component moves the part of the circuit and causes a change of state or condition of the component. A typical example is a lighted button which, when touched, moves the attached part of a circuit. This movement actuates an electrical contact, directly or indirectly, to light the lamp in the button.

3,766,351
ELECTRIC SWITCH MODULE

Edward Cryer, Higham, Nr. Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 23, 1972, Ser. No. 265,692
Claims priority, application Great Britain, June 23, 1971, 29,404/71
Int. Cl. H01h 9/02
U.S. Cl. 200—168 K 2 Claims



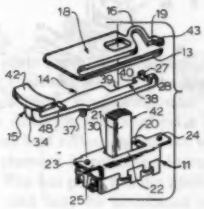
A switch module comprising a body having on opposite sides thereof an electrical plug and an electrical socket. The plug and socket have corresponding electrical contacts and the plug is so dimensioned that it can mate with a socket which is substantially identical to the socket on the other face of the body of the switch module. A switch mechanism is incorporated in the body of the switch module and is capable of completing connections between selected contacts. There are inter-connections between corresponding contacts on the plug and the socket which are not, in use, connected by the switch mechanism.

The invention further resides in a switch assembly for mounting on the steering column of the vehicle and comprising first and second switches having bores therethrough which in use receive the steering column. The first switch has a plug on one side thereof coaxial with the bore and the second switch has on one side thereof a socket in which the plug of the first switch is engageable. The second switch has on its face opposite the first switch a plug substantially identical to the plug of the first switch. The second switch having interconnections between selected contacts on the plug and socket respectively and a further socket adapted to be received by the plug on the second switch to provide external electrical connections for the assembly.

3,766,352
SAFETY LOCK MECHANISM FOR MOMENTARY SLIDE SWITCH

James E. Bigley, Zelienople, and James E. Edgell, Bradford Woods, both of Pa., assignors to Disston, Inc., Pittsburgh, Pa.

Filed Sept. 22, 1972, Ser. No. 291,411
Int. Cl. H01h 3/20
U.S. Cl. 200—169 R 7 Claims

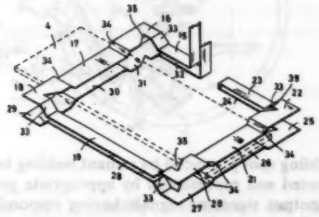


A safety lock mechanism for momentary electrical switches having a spring return slide contact is adapted to maintain the switch in an off position until the lock mechanism is released, whereupon the slide contact may be moved to an on position. Upon returning the slide contact to an off position, the safety lock mechanism is adapted to automatically become engaged thereby preventing further use of the switch until the locking mechanism is again released.

3,766,353
APPARATUS FOR THE INDUCTION HEATING OF METAL SHEETS AND PROCESS FOR HEATING SUCH METAL SHEETS

Andre Barbieux, Rue d'Heurr-le-Romain, Belgium, assignor to ELPHIAC, Chausee, de Charleroi, Belgium

Filed Jan. 12, 1972, Ser. No. 217,188
Claims priority, application Belgium, Jan. 15, 1972, 98 609
Int. Cl. H05b 5/08
U.S. Cl. 219—10.61 2 Claims



An apparatus for the induction heating of metal sheets. The apparatus comprises generally an alternating current generator, an inductor connected to the generator, and a guideway for the metal sheets to be heated passing through the inductor in a direction such that the lines of force of the magnetic field are parallel to the guideway and to themselves inside the guideway. The inductor is made in the form of a curved loop having two arms and surrounding the guideway. The loop consists of at least one main portion in which the area located between the two arms is crossed by the guideway and at least two secondary portions which are parallel to the lateral edges

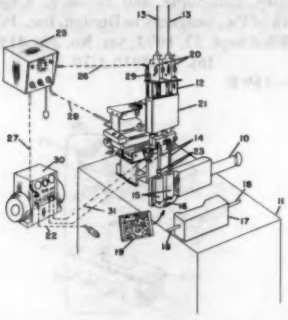
of the guideway and run along such lateral edges at a predetermined distance therefrom. The process for carrying out the heating of the metal sheets consists in passing the sheets inside the guideway through the inductor.

3,766,354

METHOD OF MANUFACTURING LAMINATED TEETH FOR BUCKETWHEEL EXCAVATOR USING ELECTROSLAG COATING

Stanton F. Bierwith, Berkeley, Calif., assignor to Great Canadian Oil Sands, Limited, Toronto, Canada

Filed Mar. 29, 1972, Ser. No. 239,073
Int. Cl. B23k *9/04*
U.S. Cl. 219—77 **8 Claims**



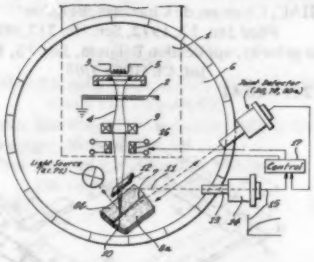
Electroslag welding techniques for hardfacing a base metal workpiece to provide a tool with a bilaminar surface containing a matrix of abrasion resistant alloy containing hard carbide particles.

3,766,355

APPARATUS FOR USE WITH ELECTRON BEAM WELDING MACHINES

Eckart Kottkamp, Weserstrasse 20, Bremen-Vegesack, Germany

Continuation-in-part of Ser. No. 16,663, March 5, 1970, abandoned. This application Aug. 23, 1971, Ser. No. 173,844
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **18 Claims**



The welding spot produced by radiant welding beam is optically detected and represented by appropriate processing of detector output signal or signals having responded to light emanating from the welding spot.

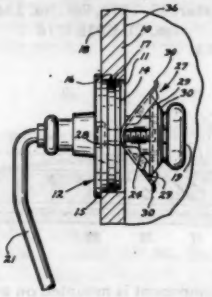
3,766,356

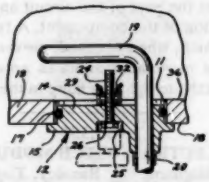
ENGINE BLOCK HEATER

Robert G. Feldmann, Eden Prairie, Minn., assignor to Pyroil Company, Inc., La Crosse, Wis.

Filed Aug. 10, 1972, Ser. No. 279,670
Int. Cl. H05b *3/02*; F02n *17/06*; H05b *3/82*
U.S. Cl. 219—208 **1 Claim**

An engine block heater has a cylindrical body member adapted to be inserted into a round opening in an engine block wall and carries an electric heating coil for heating the space on the inner side of the wall. The body member is secured in the opening by means of an angular claimping member mounted on the inner side of the body member and formed of a bendable material. The clamping member has a longitudinal dimension less than the diameter of the opening and is engaged on the inside angle thereof by a pressure bar which is





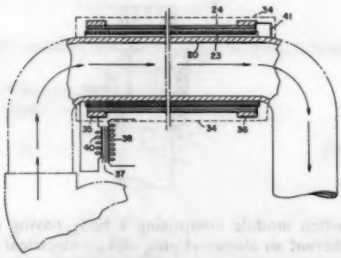
threaded on a screw extending through the body member whereby as the screw is turned from the outer side of the body member the pressure bar bears against the clamping member to straighten it into a longitudinal dimension greater than the diameter of the opening to engage against the inner side of the wall. The clamping member is channel-shaped in cross section and the pressure bar has its ends seated in the channels.

3,766,357

HIGH POWER FACTOR PIPE HEATER

George L. Koester, Jr., Woodcliff Lake, N.J., assignor to Haynes Electric Heating Company, Kenilworth, N.J.

Continuation-in-part of Ser. No. 44,350, June 8, 1970, abandoned. This application July 26, 1971, Ser. No. 165,977
Int. Cl. H05b *3/02*; E03b *7/12*; F16l *9/00*
U.S. Cl. 219—300 **2 Claims**



A high power factor heater for industrial piping has a layer of thin (0.020 to 0.125 inch) flexible sheet electrical insulation wrapped around the outside of a first pipe and in contact therewith. A second pipe of steel, stainless steel or nickel-chromium alloy sheet material surrounds the outside of the layer of electrical insulation in contact therewith. The sheet material of the second pipe preferably has residual stress which holds it in circular shape. In the preferred embodiment the second pipe tends to hug the first pipe within it because of the action of straps distributed along the second pipe hugging the outside.

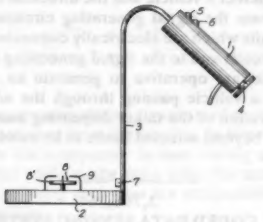
In another embodiment of the invention, the opposite sides of the second pipe have interlocks which make the second pipe hug the insulation and pull in as close as possible to the first pipe within it. The sections of the second pipe are preferably flared at the ends and welded together end to end and the flares adjust for expansion and contraction of the second pipe.

3,766,358

IMMERSION HEATER

Kurt Gass-Erb, Auf Schloss, Magden, Switzerland

Filed Apr. 27, 1972, Ser. No. 248,000
Claims priority, application Austria, Apr. 28, 1971, A 3680/71
Int. Cl. F24h *1/06*
U.S. Cl. 219—322 **25 Claims**



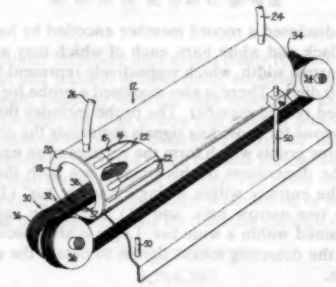
An immersion heater including a heating element immersible in a fluid for heating the latter, and a mixing device for agitating the fluid mounted on the heating element. The mixing device is reciprocable in response to energization of an electromagnetic drive, and may be connected into the electrical circuit for the heating element so as to be operable in conjunction with the operation of the heating element or responsive to temperature levels sensed in the heating element.

3,766,359

MANUFACTURE OF SPRINGS

Robert Charles Quarmby; Terence James Leonard Clarke, both of Groby, Leicestershire, and Barry Charles Thomas Wright, Birstall, Leicestershire, all of England, assignors to The British United Shoe Machinery Company Limited, Leicester, England

Filed June 14, 1972, Ser. No. 262,456
Int. Cl. F27b *9/06*
U.S. Cl. 219—388 **2 Claims**



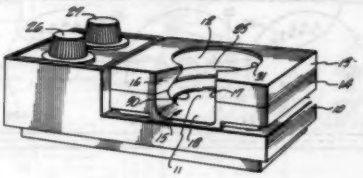
Low temperature heat treatment of springs after coiling is achieved by passing the springs, individually on a conveyor moving at a steady speed, through a heating chamber in the form of an elongate tunnel. Radiant heating means rapidly heats the springs as they are carried through the heating chamber so that they undergo a desired heat treatment. Means may be provided whereby springs can be heated at different rates as they pass through different parts of the heating chamber, so as to afford improved control of the heat treatment.

3,766,360

LABORATORY HOT PLATE

Roy T. Eddleman, Beverly Hills, and Richard L. Schmitz, Palos Verdes Penninsula, both of Calif., assignors to Biospectrum, Incorporated, Los Angeles, Calif.

Filed Aug. 7, 1972, Ser. No. 278,527
Int. Cl. F27d *11/02*
U.S. Cl. 219—415 **10 Claims**



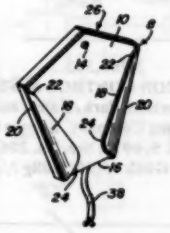
A laboratory hot plate useful for heating liquids including a container platform, a curved reflecting surface extending upwardly from the platform, a viewing and spillway trough passing through the reflecting surface and a heating element located inwardly from said reflecting surface whereby the heat emitted from said element is reflected inwardly toward the container platform. The hot plate has the ability to heat liquids at a very fast rate and may be combined with a magnetic stirrer. The trough permits viewing the contents of a transparent container and also provides a spillway in case of container breakage.

3,766,361

STETHOSCOPE HANGER AND HEATER

Theodore C. Swinyar, Collegedale, and Chester J. Warner, Dayton, both of Tenn.

Filed Oct. 2, 1972, Ser. No. 294,268
Int. Cl. H05b *3/06*
U.S. Cl. 219—521 **6 Claims**

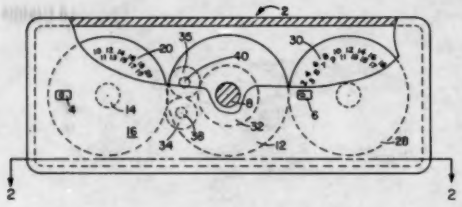


A hanger for a readily attachable and detachable stethoscope. It serves to conveniently hold and simultaneously warm the diaphragm-equipped head of a currently usable stethoscope. This hanger broadly stated is characterized by a clip which is designed and expressly adapted to lodge and support the stated head. The clip embodies a primary heat conducting plate having planar rearward and forward faces. The rearward face is equipped with self-contained heat generating and transfer means. The forward face has marginal edge portions fashioned into and providing feasible receiver means capable of supportively pocketing and suspending the head with the diaphragm residing flatwise in heating and warming contact with said forward face.

3,766,362
AVERAGING APPARATUS

Richard A. Pell, deceased, late of Baldwin, Kans. (by Elizabeth P. Pell, heir)

Filed Nov. 24, 1972, Ser. No. 309,452
Int. Cl. G06c *15/00*
U.S. Cl. 235—61 E 23 Claims

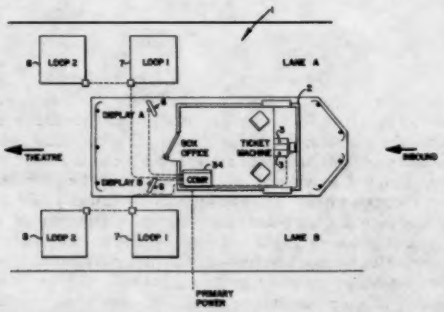


A housing having selectively spaced first indicator opening and second indicator opening is provided. A center disc is rigidly mounted to a first shaft which is reciprocally and rotatably mounted centrally in the housing. An averaging disc and a coupling disc of the same diameter as the center disc are rigidly but separately mounted on a second shaft which is rotatably mounted in the housing. The averaging disc has a peripheral numbers scale on the averaging disc face. Springs on the first shaft bias the center disc reciprocally but normally into engagement with the averaging disc. An elongated disc having a peripheral numbers scale coextensive with the averaging disc numbers scale is rotatably mounted in the housing with the center disc in constant sliding engagement with the elongated disc. A half rate disc with a diameter one half the diameter of the center disc is also rigidly mounted to the first shaft. A pair of intermediate discs are rotatably mounted in the housing and engaged with each other and the coupling disc and adapted to be engagable with the half rate disc when the half rate disc is moved into engagement therewith. So the center disc may be turned to set the first number to be averaged on the averaging disc and elongated disc and then the second number may be set on the elongated disc with the first shaft reciprocated to engage the half rate disc with an intermediate disc so that the averaging disc turns at one half the rate of the elongated disc so that the average of the two numbers may be read on the averaging disc through the first indicator opening.

3,766,363
ADMISSION CONTROL SYSTEM

Jacque R. Dhooge, Overland Park, Kans., assignor to Drive-In Theatre Manufacturing Company, Kansas City, Mo.

Filed Sept. 5, 1972, Ser. No. 286,118
Int. Cl. G06k *15/00*; G08g *1/14*
U.S. Cl. 235—61.6 R 13 Claims

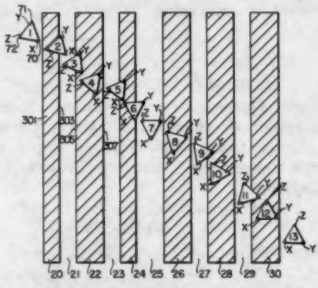


An admission control system for use with an admission center through which vehicles normally pass and wherein a predetermined fare is normally collected includes at least one ticket dispensing unit and signal generating circuits are activated by operation of the ticket dispensing unit and in response to dispensing of tickets and are operative to generate a signal corresponding to the number of tickets dispensed and signal conversion circuits are electrically connected to the signal generating circuits and are operative to convert the generated signal to a drive signal operative to drive indicating elements of a display unit to a position corresponding to the total price for the number of tickets dispensed. Vehicle sensing means are responsive to a vehicle passing thereby and in the form of a pair of spaced loops are positioned adjacent the admission center and adjacent a path of travel of vehicles passing through the admission center and are electrically connected to vehicle detecting circuits which are operative to electrically detect a vehicle and the direction of travel thereof and to activate the signal generating circuits and alarm assembly circuits which are electrically connected to the vehicle detecting circuits and to the signal generating circuits and the alarm circuits are operative to generate an alarm signal in response to a vehicle passing through the admission center without operation of the ticket dispensing assembly or operation thereof beyond selected limits as to number and valve of tickets.

3,766,364
CODED DATA SENSING SYSTEM

Theodore H. Krecioch, Hemel Hempstead, and Laurence J. Pyzer, London, both of England, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 11, 1972, Ser. No. 225,402
Claims priority, application Great Britain, Apr. 21, 1971, 10,391/71
Int. Cl. G06k *7/10*
U.S. Cl. 235—61.11 E 12 Claims



There is disclosed a record member encoded by having alternating black and white bars, each of which may assume a wide or a narrow width, which respectively represent binary 1 and binary 0 digits. There is also disclosed a probe for reading the described record member. The probe includes three light detecting means for providing signals indicating the colors detected at three points which form the vertices of an equilateral triangle. The dimensions of this triangle are such that (1) it can never be entirely within a single narrow bar, (2) it can never span two narrow bars, and (3) it must be capable of being contained within a wide bar. Logic is also disclosed for processing the detecting means signals to obtain the encoded information.

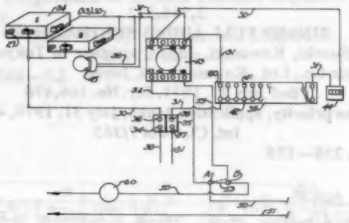
3,766,365
KEY OPERATED, MULTIPLE STATION COUNTING DEVICE

Charles H. Scott, Cincinnati, Ohio, assignor to Control Systems, Inc., Cincinnati, Ohio

Filed Nov. 18, 1971, Ser. No. 200,091
Int. Cl. G06m *3/08*
U.S. Cl. 235—92 CT 2 Claims

A self contained, key operated, multiple station counting device suitable for use, for example, with a compacting device

serving a number of users. Each user's station is provided with first key actuated means by which the trash compactor is actuated to receive, and then compact, trash placed therein, while at the same time a counting means is actuated to show this use of the compactor. Each user's station is further provided with second key actuated means by which a separate counter,



restricted to its respective station, is actuated to show that the compactor was actuated from that station. In this way the total number of times the compactor is used during a given time period is recorded while at the same time this total is broken down to show how many such uses are attributable to each of the individual stations.

3,766,366

AXIAL GUIDE FOR TRANSFER PINIONS AND DIGIT DRUMS IN COUNTERS

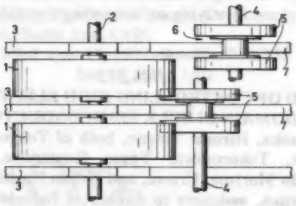
Hans Gunter Krauss, Vohrum, Germany, assignor to Elmeg Elektro-Mechanik GmbH, Peine, Germany

Filed Jan. 22, 1973, Ser. No. 325,429

Claims priority, application Germany, Jan. 24, 1972, P 22 03 249.1

Int. Cl. G06c

U.S. Cl. 235—133 **6 Claims**



In a counter including digit drums freely rotatably mounted on a shaft and transfer pinions freely rotatable mounted on a pinion shaft, coupling adjacent digit drums and axially offset relative thereto, the digit drums and transfer pinions are axially positioned by guide webs which extend into circumferential grooves provided in the transfer pinions and between adjacent digit drums coupled thereby. The guide webs may be combined into a single component mounted on or formed by a reset slide or bridge operable for resetting the digit drums.

3,766,367

CONSTANT SPEED CONTROL SYSTEM FOR VEHICLES

Masaharu Sumiyoshi; Osamu Ito, both of Toyota, and Takaaki Kato, Toyohashi, all of Japan, assignors to Wippondenso Co. Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

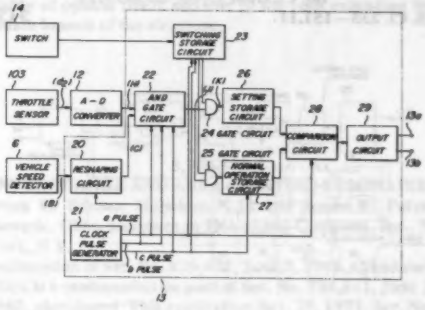
Filed Oct. 15, 1971, Ser. No. 189,626

Claims priority, application Japan, Oct. 16, 1970, 45/91454; Feb. 4, 1971, 46/4383

Int. Cl. B60k *31/00*; **G05d** *13/58*

U.S. Cl. 235—150.2 **8 Claims**

A constant speed control system for vehicles wherein the sum of pulse signals proportional in number to the actual road speed of a traveling vehicle and pulse signals proportional in number to the opening of a throttle valve in the vehicle engine are stored in a first storage circuit to provide a vehicle set speed, the sum of pulse signals proportional in number to the continually changing actual vehicle speed and pulse signals proportional in number to the throttle opening corresponding to the continually changing actual vehicle speed are stored in



a second storage circuit, and the values stored in said first and second storage circuits are compared in a comparison circuit to ascertain their relative magnitude one to another, whereby the opening of the throttle valve in the vehicle engine is adjusted in accordance with the result of the comparison so as to regulate the actual vehicle speed to a vehicle set speed thereby accomplishing constant speed control of the vehicle.

3,766,368

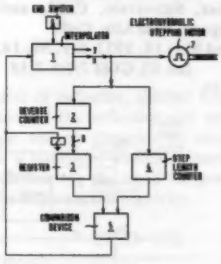
PREDETERMINED PROCESSING LENGTH IN A NUMERICALLY CONTROLLED MACHINE TOOL

Fritz Weber, Erlangen; Peter Schiewek, Eltersdorf, and Dieter Kremper, Erlangen, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 21, 1971, Ser. No. 191,161

Int. Cl. G05b *19/40*

U.S. Cl. 235—151.11 **5 Claims**



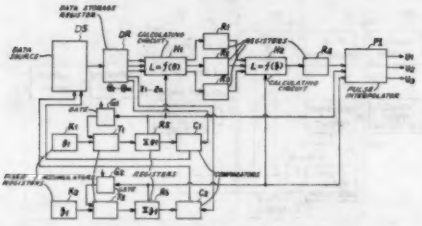
A device for nibble and planing machines for the automatic division of a predetermined processing length in a numerically controlled machine tool wherein the standard step is predetermined from the outside and is not permitted to fall short of a specific value determined by technical requirements comprises a comparison device. A difference circuit supplies a signal representing the remaining processing length ($s - x$) to the comparison device. A step length counter supplies a signal representing the step length to the comparison device. The comparison device produces an output signal for reducing the step length to divide the remaining processing length into p steps of substantially equal length when the comparison result indicates that the remaining processing length is shorter than p times a longer standard step (Δs).

3,766,369

SYSTEM FOR PRODUCING A THREE DIMENSION SURFACE

Yasuo Watanabe, Nagoya; Hiroaki Aseno, Chiryu, and Kunihiko Eto, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Feb. 3, 1972, Ser. No. 222,937
Claims priority, application Japan, Feb. 3, 1971, 46/4423
Int. Cl. G06f *15/46;* **G05b** *19/18*
U.S. Cl. 235—151.11 **3 Claims**



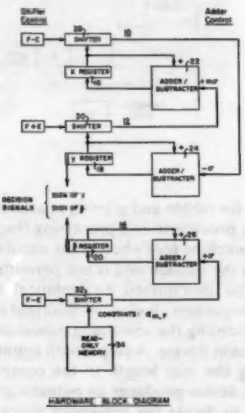
A helical working locus caused by the co-operational movements between a tool and a workpiece is represented by a number of pairs which consist of values of accumulated unit angles and unit leads. A storage device stores the co-ordinates of N^2 ($N > 3$) points derived from a data source which stores input data of all of the co-ordinates representing a desired three dimension surface. A calculator sets up N functions of an angle in accordance with the co-ordinates of the N^2 points in order to calculate the value of each of the N functions of the angle with respect to the angle of the number of pairs. Another calculator sets up a function of a lead in accordance with the calculated values in order to calculate the radius of the point represented by the number of pairs. An interpolator distributes electric pulses to a controller of a numerically controlled machine tool which operably supports the tool and the workpiece along the point represented in three dimension by the number of pairs and the calculated radius.

3,766,370

ELEMENTARY FLOATING POINT CORDIC FUNCTION PROCESSOR AND SHIFTER

John S. Walther, Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 14, 1971, Ser. No. 143,578
Int. Cl. G06f *7/00, 7/38*
U.S. Cl. 235—156 **5 Claims**



HARDWARE BLOCK DIAGRAM

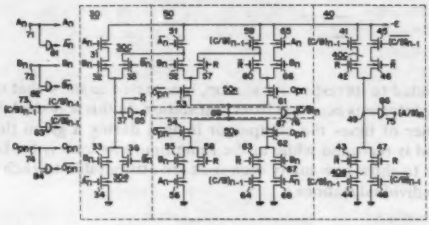
Three arithmetic units including three shifters are operated in parallel and controlled by a microprogram stored in a read-only memory to provide an improved elementary function floating-point processor. The microprogram includes a set of routines for calculating 20 elementary functions including arithmetic, exponential, hyperbolic, logarithmic, square root, and trigonometric functions. Each shifter is capable of reading a fixed plural number of consecutive bits, beginning with any bit position, from an associated data storage register.

3,766,371

BINARY FULL ADDER-SUBTRACTORS

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibawa Electric Co., Ltd., Kawasaki-shi, Japan

Filed July 27, 1971, Ser. No. 166,478
Claims priority, application Japan, July 31, 1970, 45/66919
Int. Cl. G06f *7/385*
U.S. Cl. 235—175 **2 Claims**



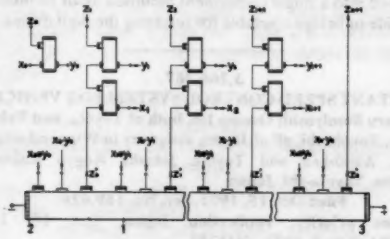
A binary full adder-subtractor includes a first logic circuit which is supplied with binary digital signals respectively corresponding to an operand and an operator; a second logic unit which is supplied with the outputs of the first logic unit and a first carrying or borrowing signal of a preceding digit; and a gating circuit including AND gate circuits and OR gate circuits and which is supplied with binary digital signals respectively corresponding to the operand, the first carrying or borrowing signal, the output of the first logic unit and an operating signal for starting an addition or subtraction operation, to provide a second carrying or borrowing signal for a succeeding digit.

3,766,372

METHOD OF CONTROLLING HIGH ELECTRIC FIELD DOMAIN IN BULK SEMICONDUCTOR

Shoei Kataoka, Hiroshi Tateno, both of Tokyo; Mitsuo Kawashima, Tokorosawa; Yasuo Komamiya, Yokohama; Michitada Morisue, Urawa, and Nobuo Hashizume, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed May 14, 1971, Ser. No. 143,418
Claims priority, application Japan, May 18, 1970, 45/41634; May 18, 1970, 45/41636; Dec. 16, 1970, 45/111835
Int. Cl. G06f *7/385*
U.S. Cl. 235—175 **26 Claims**



The invention disclosed is for a method and apparatus for controlling high electric field domain in a bulk semiconductor

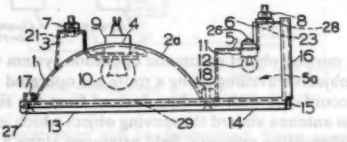
as well as an information processing method thereby. By means of a capacitive electrode, the high electric field domain may be either sustained or extinguished.

3,766,373

WRAP-AROUND TAIL LIGHT

Peter Hedgewick, Windsor, Ontario, Canada, assignor to Reflex Corporation of Canada Limited, Windsor, Ontario, Canada

Filed May 5, 1972, Ser. No. 250,551
Int. Cl. B60q 1/24
U.S. Cl. 240—8.3 **10 Claims**



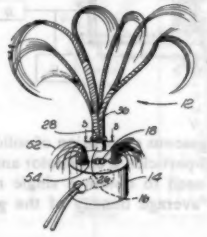
A vehicle lamp assembly having a curved reflector chamber and an adjacent indented chamber, each chamber having its own respective light source. A lens covers the front openings of both the reflector and indented chambers. A second lens covers the side opening of the indented chamber. At least one of the lenses can be slidably mounted over its respective opening. The vehicle lamp can also be a combination tail light, stop light, side marker light, turn signal, and rear and side reflectors for use on a trailer.

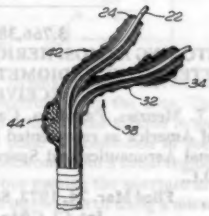
3,766,374

DECORATIVE STRUCTURE

Shirlee Fairchild, Huntington Beach, Calif., assignor to Poly-Optics, Inc., Santa Ana, Calif.

Filed Apr. 17, 1972, Ser. No. 244,735
Int. Cl. F21p 1/02
U.S. Cl. 240—10 L **7 Claims**





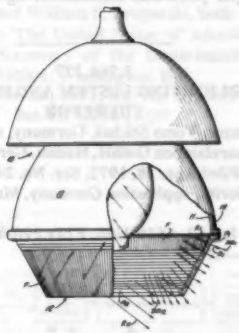
A decorative structure having a plurality of flexible optical fibers each having a light-receiving end and a light-emitting end. A structural rod which may be flexible or rigid is positioned adjacent a portion of the optical fibers. A wrapping is provided for securing a portion of the optical fibers to the structural rod. The light-receiving ends of the fibers are positioned near the light path of a light source for illumination of the optical fibers. In addition, a plurality of structural rods may be surrounded by the optical fibers adjacent the light-receiving end of the fibers. A plurality of side branches can be formed from a main branch with each side branch formed of a plurality of optical fibers and one of the rods extending from the main branch of the structure.

3,766,375

INTERCHANGE AND AREA LIGHTING LUMINAIRE

Warren H. Edman, Hohokus, N.J., and James W. Patyrak, Newark, Ohio, assignors to Holophane Company, Inc., New York, N.Y.

Continuation of Ser. No. 829,475, June 2, 1969, abandoned, which is a continuation-in-part of Ser. No. 734,841, June 3, 1968, abandoned. This application Nov. 29, 1971, Ser. No. 203,020
Int. Cl. F21s 1/10
U.S. Cl. 240—25 **15 Claims**



The combination of reflector, skirted with a refractor for redistributing some of the reflected and some of the direct light from a light source disposed at very high mounting heights, provides a luminaire to light interchange and other highway areas, eliminating the need for positioning highway lighting luminaires adjacent the highway.

3,766,376

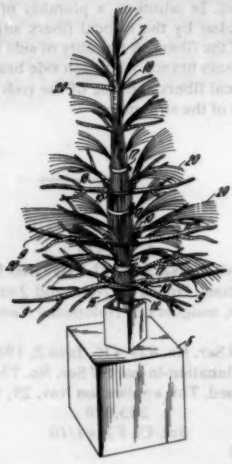
ARTIFICIAL CHRISTMAS TREE ILLUMINATED BY OPTIC FIBER SPRAYS

Albert V. Sadacca, Wilmette, and Bernard Paulfus, Palos Hills, both of Ill., assignors to Noma-World Wide, Inc., Chicago, Ill.

Filed Mar. 2, 1972, Ser. No. 231,143
Int. Cl. F21p 1/02; A47g 33/06, 33/16
U.S. Cl. 240—10 L **5 Claims**

A Christmas tree illuminated by a multiplicity of optic fiber sprays is provided in which an illuminator or light source is positioned in the base of the Christmas tree and bundled separately encapsulated fiber optic conduits extend upwardly from the base along the tree trunk. These fiber optic conduits

branch out from the bundle along the tree trunk to extend laterally along the branches of the tree. The conduits ter-



minate in a spray of optical fibers to provide a radiant multiplicity of pin point-like ornamental lights over the entire tree.

3,766,377

FLOODLIGHTING SYSTEM AND SPOTLIGHTS THEREFOR

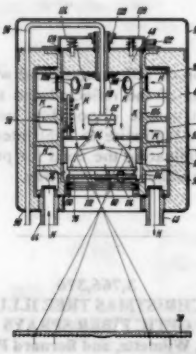
Klaus Junginger, Vorm Stichel, Germany, assignor to Original Hanau Quarzlampen GmbH, Hanau, Germany

Filed Apr. 28, 1972, Ser. No. 248,703

Claims priority, application Germany, May 6, 1971, P 21 22 330.3

Int. Cl. A61b *1/06*; F21v *29/00, 3/04*

U.S. Cl. 240—41.15 **27 Claims**



An adjustable floodlight system having a plurality of spotlights 30 pivotally mounted on a ring 34 gimballed in a yoke supported from several rotatably coupled arms 16, 18, 24. Each spotlight has a sealed lamp and reflector unit 60 surrounded by a cylindrical casing 104 fitted on its outside with ported cooling fins 54. The fins are enclosed within a cylindrical jacket 100 surrounded by insulating material 48. An externally supplied coolant gas is forced up through the tiered fins, into the casing 104, down over the lamp unit and out.

3,766,378

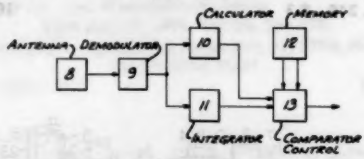
MOVING OBJECT AUTOMATIC OPERATION SYSTEM

Takeshi Baba, Itabashi-ku, Tokyo; Tadao Yaku, Toshima-ku, Tokyo; Hisao Nakajima, Musashino City, Tokyo; Toshihiko Kishimoto, Nakano-ku, Tokyo, and Kenichi Yoshida, Konohana-ku, Osaka, all of Japan, assignors to Japanese National Railways, Tokyo and Sumitomo Electric Industries, Ltd., both of Osaka, Japan

Filed June 3, 1971, Ser. No. 149,554

Int. Cl. B61l *27/04*

U.S. Cl. 246—63 C **4 Claims**



A moving object automatic operation system wherein moving objects travelling along a route are operated automatically in accordance with the data derived from the signal detected by an antenna aboard the moving object which is coupled with the alternating magnetic field produced along a leaky coaxial cable, together with a predetermined location speed operation curve for each section of the route.

3,766,379

MEASURING DENSITY BY BETA-PARTICLE ABSORPTION

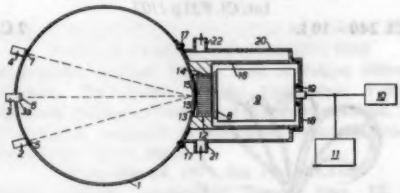
Michael John Parkinson, Effingham Junction, England, assignor to The British Coal Utilisation Research Association Limited, Leatherhead, Surrey, England

Continuation-in-part of Ser. No. 829,242, June 2, 1969. This application Mar. 4, 1971, Ser. No. 120,866

Claims priority, application Great Britain, June 5, 1968, 26,822/68

Int. Cl. G01n *23/12*

U.S. Cl. 250—43.5 D **9 Claims**



In measuring density of a gaseous suspension of solid particles two or more sources of β-particles, a collimator and a single β-particle detector are used to obtain a single reading which is a measure of the average density of the gaseous suspension.

3,766,380

MONITORING ATMOSPHERIC POLLUTANTS WITH A HETERODYNE RADIOMETER TRANSMITTER-RECEIVER

Robert T. Menzies, Pasadena, Calif., assignor to The Untied States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

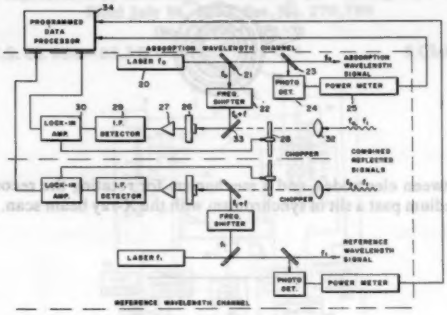
Filed Mar. 24. 1972, Ser. No. 237,694

Int. Cl. G01n *21/26*

U.S. Cl. 250—43.5 R **4 Claims**

The presence of selected atmospheric pollutants can be determined by transmitting an infrared laser beam of proper wavelength through the atmosphere, and detecting the reflec-

tions of the transmitted beam with a heterodyne radiometer transmitter-receiver using part of the laser beam as a local oscillator. The particular pollutant and its absorption line strength to be measured are selected by the laser beam wave length. When the round-trip path for the light is known or



measured, concentration can be determined. Since pressure (altitude) will affect the shape of the molecular absorption line of a pollutant, tuning the laser through a range of frequencies, which includes a part of the absorption line of the pollutant of interest, yields pollutant altitude data from which the altitude and altitude profile is determined.

3,766,381

APPARATUS AND METHOD OF CHARGE-PARTICLE SPECTROSCOPY FOR CHEMICAL ANALYSIS OF A SAMPLE

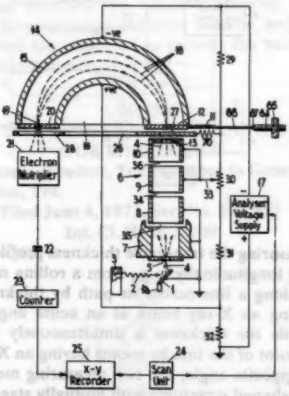
John Merza Watson, 436 Parrs Wood Rd., Manchester, England

Filed May 8, 1972, Ser. No. 250,893

Claims priority, application Great Britain, May 7, 1971, 13,844/71

Int. Cl. H01j *37/00*

U.S. Cl. 250—49.5 AE **11 Claims**



An area of a sample is irradiated with electromagnetic radiation so as to release electrons from the area. The electrons are focused to form an image of the sample in an image plane. An apertured image plate is positioned in the image plane to permit only those electrons from a small region of the emitting area to pass. Electrons passing the aperture are energy analyzed. The result is the equivalent of using a microprobe to irradiate the small region. The particles may be retarded before they enter the analyzer, in order to increase sensitivity. A focusing system of five or more lens elements is shown for permitting the analyzer to be used with or without the lens plate without repositioning the system lenses.

3,766,382

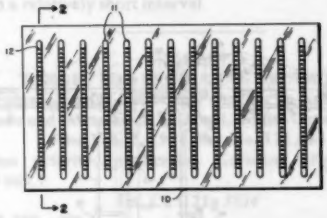
CORONA DEVICE

Heh-Sen Lin, Burlington, Mass., assignors to LFE Corporation, Waltham, Mass.

Filed Oct. 24, 1972, Ser. No. 299,864

Int. Cl. G03g *15/00*

U.S. Cl. 250—324 **4 Claims**



A corona discharge element disclosed is made in the form of a gear rack in which the end of each gear tooth is flat with four sharp corners for corona emission. Also disclosed is an assembly of a plurality of such elements embedded in a dielectric plate to provide an efficient uniform corona discharge over a predetermined area.

3,766,383

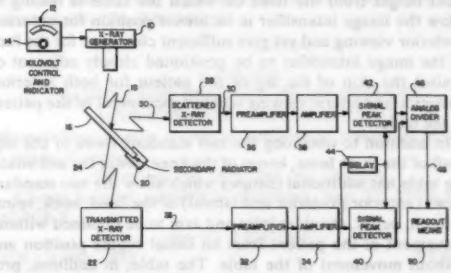
TECHNIQUES AND APPARATUS FOR CALIBRATING THE KILOVOLTAGE INDICATOR ON DIAGNOSTIC X-RAY GENERATORS

Gerald R. Harris, and William S. Properzio, both of Rockville, Md., assignors to The United States of America as represented by the Secretary of the Department of Health Education, and Welfare, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,439

Int. Cl. G01n *23/20*

U.S. Cl. 250—51.5 **9 Claims**

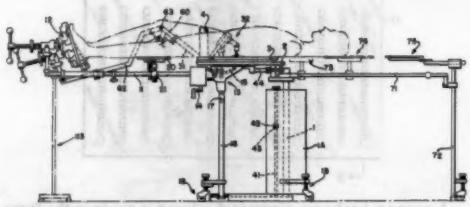


A novel apparatus for calibrating the kilovoltage indicator on diagnostic x-ray generators is disclosed. A flat sheet element having a known K-edge absorption energy value is placed in the irradiating path of x-rays produced by the diagnostic x-ray generator, the element preferably being disposed at an angle of 45° to the generated radiation path. As the energy of the generated x-rays is increased, the amount or radiation scattered from the element is detected by a detector means preferably disposed at an angle of substantially 90° to the generated x-ray beam and in line with the center of the element. Similarly, the amount of radiation transmitted through the element is detected by detector means preferably disposed in the path of the x-ray beam and immediately below the element. The ratio between the transmitted and scattered detected radiation values is monitored and a change in slope sign of the monitored ratio is determined. Such change in slope sign occurs at the known K-absorption edge value of the irradiated element and by noting the reading on the kilovoltage indicator of the diagnostic x-ray generator at this point, calibration of such meter can be effected.

3,766,384
SURGICAL TABLE

Roger Anderson, deceased, late of c/o Tower Co., Inc., First Ave. South, Seattle, Wash. (by Susan Carver Anderson, executrix)

Filed Apr. 28, 1971, Ser. No. 138,113
Int. Cl. G01n *23/00*
U.S. Cl. 250—446 15 Claims



A multi-purpose surgical table and method of use is disclosed, the table having particular use in conjunction with a mobile X-ray image intensification unit. The table provides an open area free of obstructions for the image intensifier of the image intensification unit to be located beneath the patient, permitting lateral and anterior-posterior views of an injured extremity or trunk of the body without change of position of the patient from an initial supine position on the table, without change in position of the table, and without change in the initial set position of the image intensification unit on the floor. The table has a sacral rest extending distally of a support pedestal. The sacral rest is substantially transparent to X-rays and free of any obstruction directly underneath. A perineal post substantially transparent to X-rays is mounted on the sacral rest. A leg support for the leg to be treated pivots vertically and horizontally about a pivot point coinciding with the anatomical axis of the hip joint of the injured leg. The leg support extends alongside the outer length of the leg at a sufficient height from the floor on which the table is resting to allow the image intensifier in its lowest position for anterior-posterior viewing and yet give sufficient clearance for the face of the image intensifier to be positioned closely adjacent or against the skin of the leg of the patient for both anterior-posterior and lateral viewing without movement of the patient or the table.

In addition to obtaining the two standard views of the hip, shaft of the thigh bone, bones of the knee, lower leg and ankle, the table has additional features which allow the two standard views (anterior-posterior and lateral) of the head, neck, spinal column, pelvis, shoulder joint and arm to be obtained without movement of the patient from an initial supine position and without movement of the table. The table, in addition, provides a unique non obstructing way of obtaining abduction, adduction and flexion-extension on anatomic centers at the shoulder of an injured arm or at the hip of the injured or well leg, and means of holding the legs in any degree of such movement. The table also provides a means of obtaining flexion-extension of the knee on its anatomic center. The table is also useful for diagnosis, reduction of fractures, vascular surgery and other techniques.

3,766,385
ROLLING CYLINDER CASSETTE FOR ELECTRON RADIOGRAPHY

Arthur Lee Morsell, Tarzana, and Norton L. Moise, Los Angeles, both of Calif., assignors to Konics, Inc., Van Nuys, Calif.

Filed Apr. 14, 1972, Ser. No. 243,982
Int. Cl. G01n *23/04*
U.S. Cl. 250—68 8 Claims

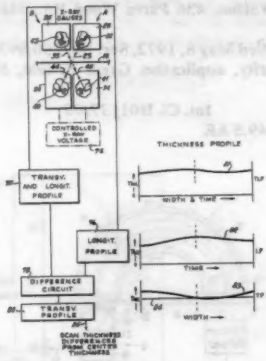
An X-ray system for producing a fan-shaped beam and scanning the beam over the object to be X-rayed for reducing fogging due to scattering and reducing exposure of the patient. A cassette for holding the record medium in a gas filled gap

between electrodes, and a mechanism for rotating the record medium past a slit in synchronism with the X-ray beam scan.

3,766,386
PROFILE MEASUREMENT OF MOVING METAL STRIP

Olivo G. Sivilotti, and William Elfyn Davies, both of Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Nov. 3, 1971, Ser. No. 195,339
Int. Cl. G01n *23/02*
U.S. Cl. 250—83.3 D 34 Claims



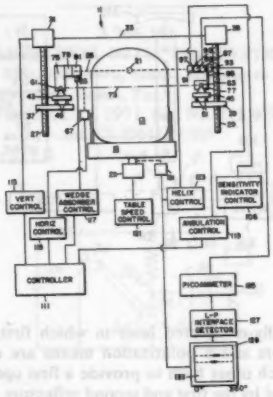
For measuring the transverse thickness profile of metal strip advancing longitudinally, e.g., from a rolling mill, the strip is scanned along a line across its path by thickness measuring means using an X-ray beam at an acute angle to the strip plane, while the thickness is simultaneously measured at a selected point of the line by means having an X-ray beam at a like but opposite angle, the two measuring means being carried by C-shaped structures with mutually staggered arms accommodating the beams at crossing angles whereby the scanning means can pass the other means without mutual interference of function. By combining the signals from the two measurements, longitudinal thickness variations during scanning time are in effect eliminated and an accurate, rapid determination of transverse profile is obtained. The operation is especially useful in relation in hot rolling of strip, permitting adjustments during rolling, automatically if desired, to correct or avoid profile ergors, with particular advantage in avoidance of such distortions of shape as may occur, upon rewinding an ultimate cold rolled strip, because of non-flatness of profile that cannot be corrected in cold rolling.

3,766,387

NONDESTRUCTIVE TEST DEVICE USING RADIATION TO DETECT FLAWS IN MATERIALS

Howard Heffan, Pleasant Hill; Emil M. Bergh, Walnut Creek; John W. Mauch, Danville, and Walter J. Sawick, Napa, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 11, 1972, Ser. No. 270,780
Int. Cl. G01n 23/02
U.S. Cl. 250—83.3 D 8 Claims



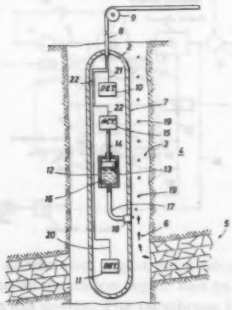
A nondestructive test device for detecting flaws such as boundary separation between the liner and propellant of missile motors and the like. The device includes a rotatable table upon which the motor to be tested is mounted. A horizontal movement carriage is mounted on a vertical movement carriage. Mounted upon the horizontal movement carriage is a radiation source and a detector. The source emits radiation that passes through the motor and is received by the detector The motor is rotated and defects cause an increase in radiation received by the detector resulting in a deviation from the normal signal. This detected deviation is electronically processed and recorded. A radiation absorber, a rotating slotted helix for providing a radiation window, and a helix angulation control are employed to provide the necessary controls and desired information.

3,766,388

RADIOACTIVE TRACER METHOD AND APPARATUS FOR BOREHOLES

John E. Greaney, Houston, Tex., assignor to General Nuclear, Inc., Houston, Tex.

Filed June 4, 1971, Ser. No. 149,957
Int. Cl. H01n 37/00
U.S. Cl. 250—266 10 Claims



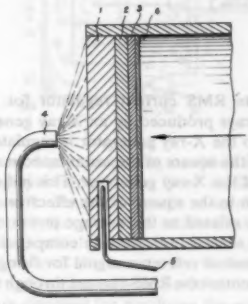
Improved well-logging apparatus is provided which employs a long-lived radioactive material for tracing the flow path of fluid traveling in a subterranean borehole. The radioactive source is a porous capsule containing a long-lived parent isotope in a granule form incapable of permeating the wall of the capsule, but producing non-granulated daughter product having a short half-life. A flush of solvent is passed through the capsule and into the borehole to dissolve away the daughter product and to redeposit it in the borehole. Hence, the long-lived parent isotope is kept from contaminating the borehole, and only the short-lived daughter product is used which disappears in a relatively short interval.

3,766,389

TARGET FOR PRODUCING NEUTRONS

Hans Fabian, Gustav, Germany, assignor to Nukem Nuklear-Chemie und -Metallurgie G.m.b.H., Main, Germany

Filed Feb. 2, 1971, Ser. No. 111,821
Claims priority, application Germany, Feb. 2, 1970, P 20 09 049.7
Int. Cl. G21g 3/04
U.S. Cl. 250—499 5 Claims



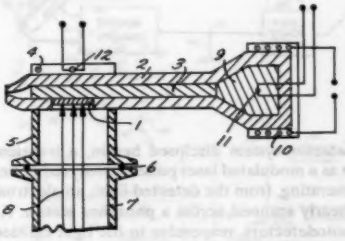
A target for producing neutrons is composed of layers of hydrides mounted on a plate impermeable to hydrogen. This increases the life of the target.

3,766,390

TARGET FOR NEUTRON PRODUCTION IN ACCELERATOR INSTALLATIONS

Hans Fabian, Hanau, Germany, assignor to Nukem, G.m.b.H., Main, Germany

Filed Aug. 10, 1971, Ser. No. 170,431
Claims priority, application Germany, Aug. 27, 1970, P 20 42 538.3
Int. Cl. G21g 3/00
U.S. Cl. 250—499 7 Claims



A target for neutron production is developed that is provided laterally of the target with a hydride accumulator from which the tritium is fed by heating of the target material.

3,766,391

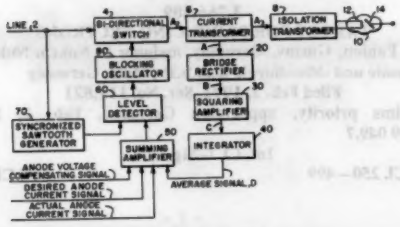
RMS CURRENT REGULATOR FOR AN X-RAY TUBE

Melvin P. Siedband, and Jack L. James, both of Baltimore, Md., assignors to CGR Medical Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 742,463, July 3, 1968, abandoned, Continuation of Ser. No. 115,060, Feb. 12, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 247,027

Int. Cl. H05g 1/32, 1/34

U.S. Cl. 250—403 15 Claims



A solid state RMS current regulator for controlling the amount of X-rays produced by an X-ray generator. The filament power to the X-ray generator is regulated by obtaining the average of the square of the instantaneous current through the filament of the X-ray generator. This indication is in perfect proportion to the square of the effective or RMS current and is directly related to the average power delivered to the filament. The sensed indication is compared with an X-ray generator operation reference signal for firing a semiconductor switch to control the RMS current through the filament.

3,766,392

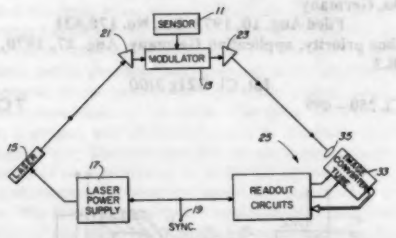
LIGHT PULSE ANALYZING DETECTOR SYSTEM

Melvin A. Nelson, Santa Barbara; John C. Clark, Goleta, both of Calif., and Jerry G. Lackey, Charleston Heights, S.C., assignors to EG&G, Inc., Bedford, Mass.

Filed June 11, 1971, Ser. No. 152,131

Int. Cl. H04b 9/00

U.S. Cl. 250—199 10 Claims



In the detector system disclosed herein, a transient light signal, such as a modulated laser pulse, is analyzed or demodulated by generating, from the detected light, an electron beam which is linearly scanned across a phosphor screen. A linear array of photodetectors, responsive to the light emitted from corresponding portions of the screen, provide respective electrical signals having amplitudes corresponding to the instantaneous intensity of the light signal at respective times within the transient interval. These electrical signals are integrated and held in respective circuits for subsequent commutation and conversion to digital form.

3,766,393

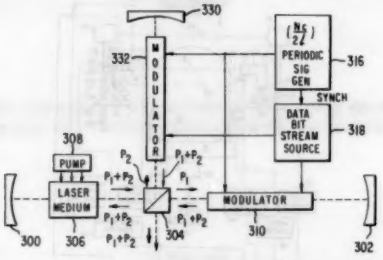
OPTICAL DATA TRANSMISSION SYSTEM EMPLOYING POLARIZATION-SHIFT, MULTIPLE-CAVITY LASER

Donald George Herzog, Collingswood, and Charles William Reno, Haddonfield, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,716

Int. Cl. H04b 9/00

U.S. Cl. 250—199 5 Claims



An internally-modulated laser in which first, second and third reflectors and a polarization means are oriented with respect to each other both to provide a first optical resonant cavity, defined by the first and second reflectors, and a second optical resonant cavity, defined by the first and third reflectors. A laser medium is located in the common portion of the cavities between the first reflector and the polarization means, and an individual data-signal-responsive modulator is situated in each respective individual portion of the cavities between the polarization means and the respective second or third reflector. The first cavity supports a given polarization and the second cavity supports a polarization orthogonal to the given polarization. The modulated output wave energy provided by this apparatus includes two separate orthogonally polarized data channels.

3,766,394

DEVICE FOR THE OPTICAL-ELECTRICAL SCANNING OF AN INFORMATION CARRIER

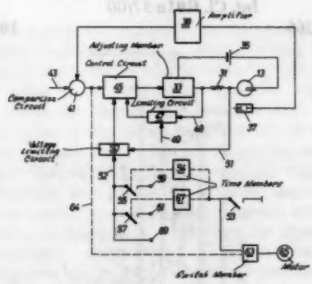
Gernot Gottschal, Boblingen, Germany, assignor to Firma Franz Morat GmbH, Hessbruhlstrasse, Germany

Filed Aug. 20, 1971, Ser. No. 173,374

Claims priority, application Germany, Sept. 22, 1970, P 20 41 795.2

Int. Cl. G01j 1/32

U.S. Cl. 250—205 R 6 Claims



A device for the optical-electrical scanning of an information carrier with a scanning device especially for use with a knitting machine having at least one lamp, at least one

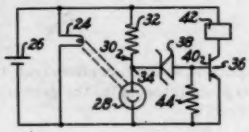
photoelectric cell, a transport means for establishing relative motion between the information carrier and the scanning device, including a control circuit to maintain a preselectable rated intensity in said lamp, a voltage limiting circuit for the lamp voltage, a first time member associated with said voltage limiting circuit through which the lamp voltage during the switch-on process is at first limited to a value above the preselected lamp voltage and a preselected time span after the switch on process to nominal lamp voltage and that the transport means is activated after attainment of a rated intensity.

3,766,395

FLUID LEVEL DETECTION SYSTEM

Alexander S. Keir, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 27, 1971, Ser. No. 212,078
Int. Cl. G01f *23/00*
U.S. Cl. 250—214 R **20 Claims**



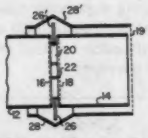
A system is disclosed for detecting the presence or absence of a medium and includes a radiation emitting means and a radiation responsive means selectively coupled to the radiation emitting means responsive to the absence of the medium. The radiation responsive means has an electrical property which varies in response to the incidence of radiation thereon. In addition, a selectively energizable switch means having a control element is coupled to the radiation responsive means through a selectively energizable coupling means having a predetermined substantially constant voltage threshold level, whereby the state of energization of the switch means is controlled responsive to variations in the electrical property of the radiation responsive means substantially independently of variations in power being supplied to the system.

3,766,396

ION SOURCE

William P. Kruger, Los Altos Hills; Wilson R. Turner, Los Gatos, and Robert D. Board, Sunnyvale, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 9, 1972, Ser. No. 306,223
Int. Cl. H01j *39/34*
U.S. Cl. 250—427 **3 Claims**



An electrically conductive, high-transmission membrane is supported between an ionization region and an exit region for positive ions in an ion source. The membrane is operated at a potential more negative than the source of ionizing electrons to repel primary and secondary electrons exiting from the ion source while transmitting the desired positive ions.

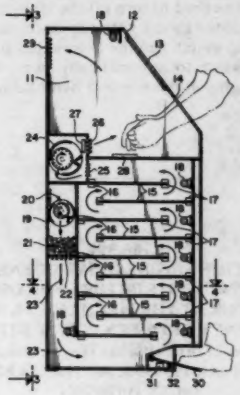
3,766,397

STERILIZING HAND DRYER

Thomas Rockson, 1920 Railroad Ave., Holbrook, N.Y.

The Portion of the term of this patent subsequent to June 6, 1989 has been disclaimed.

Filed Apr. 12, 1972, Ser. No. 243,274
Int. Cl. F26b *19/00*
U.S. Cl. 250—432 **10 Claims**



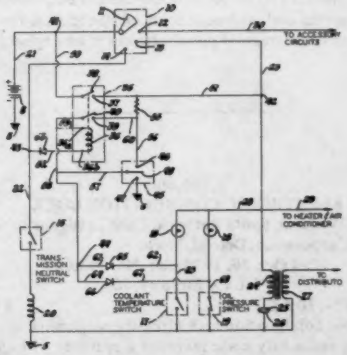
An electric hand dryer comprising a cabinet having a pair of circular openings provided in the front surface thereof for receiving the user's arms and hands, a sterilizing air bath chamber into which the arms and hands of the user are inserted, and through which sterilized, heated air is circulated for drying the hands of the user, a sterilization chamber in which a plurality of horizontally-disposed air baffles and germicidal lamps are disposed for sterilizing the air, and a pair of air blowers for forcing air into and out of the sterilization chamber and into the air bath chamber for drying the user's hands with the sterilized air. An air filter is provided for filtering the air drawn into the sterilizing chamber from outside the cabinet.

3,766,398

SYSTEM FOR OPERATING AN UNATTENDED AUTOMOBILE ENGINE

Richard P. Ballou, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed June 15, 1972, Ser. No. 262,962
Int. Cl. H02p *9/04*
U.S. Cl. 290—38 **5 Claims**



A system for operating an unattended automobile engine. The normally open contacts of an electrical relay are con-

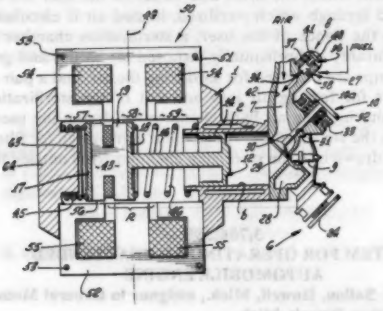
nected in shunt across the movable contact and stationary ignition circuit contact of the ignition switch. The relay operating coil is energizable upon the operation of the ignition switch to the "Crank" and/or "Run" position and is maintained energized upon the operation of the ignition switch to the "Off" position through the relay contacts connected in shunt across the contacts of the ignition switch. The relay operating coil may be shunted by a normally open selector switch when it is desired to turn off the ignition system of the engine and is shunted by the normally open coolant temperature tell-tale lamp switch and the normally closed oil pressure tell-tale lamp switch to automatically turn off the ignition system of the engine in the event of overheating or loss of oil pressure.

3,766,399

COMBUSTION ENGINE DRIVEN GENERATOR INCLUDING SPRING STRUCTURE FOR OSCILLATING THE INDUCTOR AT THE MECHANICAL RESONANT FREQUENCY BETWEEN POWER STROKES

Mihal Demetrescu, 17761 Palmento Way, Irvine, Calif.

Filed Oct. 19, 1972, Ser. No. 298,824
Int. Cl. H02p *9/04*
U.S. Cl. 290—40 43 Claims



A generator in which the inductor is operatively connected to spring structure to be periodically oscillated relative to an induced current coil, at frequencies of mechanical resonance and responsive to irregular power strokes of an engine piston.

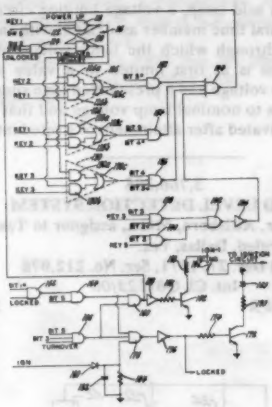
3,766,400

ELECTRONIC COMBINATION LOCK

William L. Walters, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,023
Int. Cl. E05b *49/00*
U.S. Cl. 307—10 AT 4 Claims

Electronic combination lock circuitry responsive to either a primary or secondary code includes a plurality of logic gates adapted to be selectively connected with one of two pushbutton ordered sequences associated with the primary and secondary codes to control a multistage serial shift register which in turn selectively enables the logic gates in the ordered sequence and provides a lock/unlock criteria. The circuitry is normally programmed to respond to the primary code but may



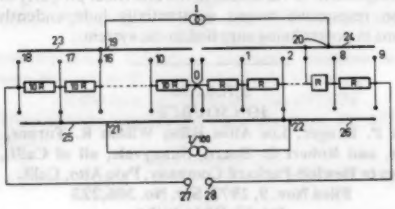
be rendered responsive to the secondary code by simultaneous actuation of two pushbuttons after the primary code has been entered.

3,766,401

CALIBRATING VOLTAGE GENERATOR

Willem Thomas Bolk, Zeist, Netherlands, assignor to Nederlandse Optiek-en Instrumentenfabriek Dr. C.E. Bleeker N.V., Zeist, Netherlands

Filed May 10, 1972, Ser. No. 252,000
Claims priority, application Netherlands, May 11, 1971, 7106416
Int. Cl. H02j *1/10*
U.S. Cl. 307—43 2 Claims



A device for providing a precise calibrating voltage permitting of adjustment to high resolution and great linearity, in which to avoid their influence contact resistances only occur in circuits with current sources.

3,766,402

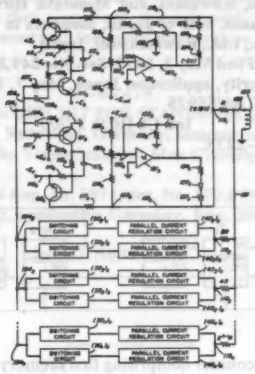
DIGITAL-TO-ANALOG CONVERTER PARALLEL-CURRENT VOLTAGE REGULATING CIRCUIT

Jaan Raamot, Franklin Twp., Somerset Cty., N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 805,543, March 10, 1969, abandoned. This application Mar. 9, 1971, Ser. No. 122,496
Int. Cl. G05f *1/56*; H03k *13/04*
U.S. Cl. 307—44 2 Claims

A parallel-current voltage regulating circuit supplies a compensating current to a load resistor primarily energized from

an unregulated source so that the voltage across the load resistor is maintained equal to a reference voltage. Dual regulating circuits are used when the polarity of the voltage across the load is reversible.



3,766,403

APPARATUS FOR ENSURING DC POWER SUPPLY FROM EITHER AC OR RECHARGEABLE DC SOURCE

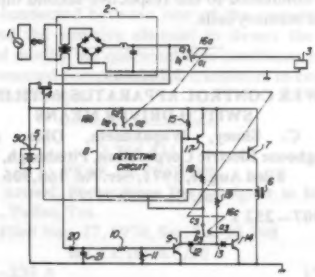
Takashi Tsutsumi, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 23, 1971, Ser. No. 255,980

Claims priority, application Japan, May 26, 1971, 46/36541

Int. Cl. H02j 7/00

U.S. Cl. 307—66 **5 Claims**



A power supply apparatus for supplying DC power to an electric appliance such as a radio receiver, a television receiver and the like is adapted to be connected selectively to an AC power source or a rechargable battery for producing DC power, the connection being changeable manually and also automatically when the AC power is interrupted.

3,766,404

COMPOSITE D.C. AMPLIFIER FOR USE WITH A TOUCH SENSITIVE ELECTRONIC SWITCH

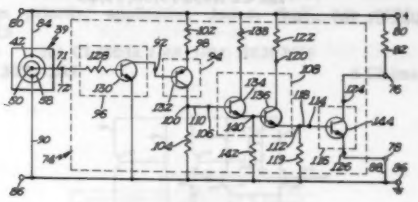
Willis A. Larson, Wayzata, and Raymond M. Warner, Jr., Edina, both of Minn., assignors to Magic Dot, Inc., Minneapolis, Minn.

Filed Nov. 16, 1971, Ser. No. 199,227

Int. Cl. H01h 35/00

U.S. Cl. 307—116 **13 Claims**

A composite D.C. amplifier for use with a touch sensitive electronic switch which has no moving parts and is actuated by the skin resistance of an operator causing a lowering of D.C. resistance across the switch is disclosed. The composite amplifier, in the preferred embodiment, includes five direct coupled transistors and various current limiting and leakage preventing resistors. The amplifier is arranged to accept an input current on the order of nanoamperes from the touch sensitive switch when actuated and provide an output current in the milliampere range or higher to an electrical load and thus appear as an electronic switch which is in a closed or ON condition. The amplifier is also arranged to avoid providing an output current when the switch is not actuated to thus appear as an electronic switch which is in an open or OFF condition.



3,766,405

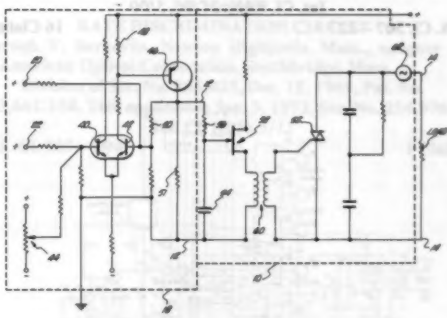
SWITCH WITH A CONTROLLABLE DUTY CYCLE

Charles H. Armstrong, Huntington Beach, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed May 11, 1972, Ser. No. 252,258

Int. Cl. H01h 7/16

U.S. Cl. 307—133 **7 Claims**

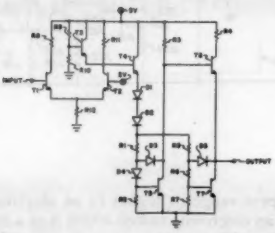


A switch having a duty cycle which varies with the level of an input signal is described. The switch includes a control circuit and load circuit and is arranged to close and open the load circuit in response to the application of first and second control signals to the control circuit. Control means including a sawtooth sweep generator and a comparator for comparing the instantaneous levels of the input signal and the sweep voltage is provided to apply the first control signal to the control circuit during a portion of each sweep period when the difference between such levels exceeds a preselected value. The second control signal is applied during the remainder of each sweep period. Thus the ratio of on to off time of the switch is proportional to the level of the input signal.

3,766,406
ECL-TO-TTL CONVERTER

Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Continuation of Ser. No. 65,224, Aug. 17, 1970, abandoned.
This application Dec. 6, 1971, Ser. No. 204,816
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—203 1 Claim

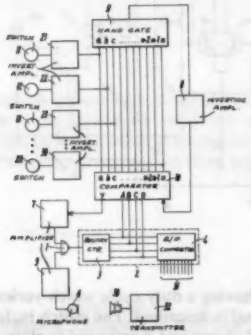


An ECL-to-TTL converter having an ECL input stage for deriving a signal to drive a TTL output stage. The TTL output stage includes a pair of transistors arranged in a push-pull configuration for maximum speed of operation.

3,766,407
ARRANGEMENT FOR APPLYING A SIGNAL TO A SELECTED LINE

Max Hegendorfer, Forchheim, Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig, Furth, Germany

Filed Mar. 8, 1972, Ser. No. 232,869
Claims priority, application Germany, Mar. 26, 1971, P 21 14 633.8
Int. Cl. H03k *21/00, 5/00*
U.S. Cl. 307—223 16 Claims

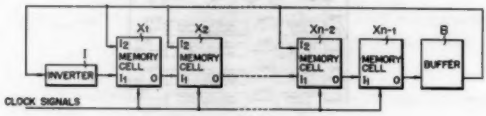


An arrangement for applying a signal to one of a plurality of lines has a series of contact switches. Actuation of any one of the switches causes a pulse sequence to be applied to one of a plurality of input lines. The pulse sequence is also applied to a counter which counts until the counter output corresponds to the energized input line. The binary counter output is converted to decimal form and the decimal output energizes an output line corresponding to the energized input line.

3,766,408
COUNTER USING INSULATED GATE FIELD EFFECT TRANSISTORS

Yasoji Suzuki, Kawasaki, and Masataka Hirasawa, Kohoku-ku, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 3, 1972, Ser. No. 249,803
Claims priority, application Japan, May 7, 1971, 46/30268; July 28, 1971, 46/55928
Int. Cl. H03k *27/00*
U.S. Cl. 307—223 C 28 Claims

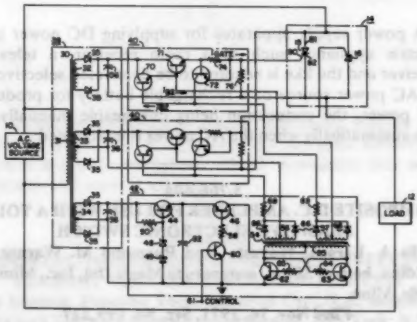


An *n*-scale counter comprising first memory cells or shift registers cascade connected in a number of (*n*-2), one second memory cell or shift register and one inverter circuit. Each of the first memory cells has first and second input terminals and one output terminal. While an input signal to the second or reset terminal has a first voltage level, an input signal applied to the first input terminal is taken out as an output signal at the output terminal with a delay of a predetermined length of time, and while an input signal to the reset terminal has a second voltage level, an output signal from the output terminal is reset. The second memory cell has one input terminal and one output terminal so as to cause a signal supplied to input terminal to be taken out as an output signal at the output terminal with a delay of a predetermined length of time. The second memory cell and inverter are connected between the foremost and rearmost units of the first memory cell assembly, and the junction of the second memory cell and the inverter circuit is connected to the respective second input terminals of the first memory cells.

3,766,409
AC POWER CONTROL APPARATUS WITH IMPROVED SWITCH DRIVER MEANS

Kenneth C. Shuey, Wapakoneta, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 4, 1971, Ser. No. 168,906
Int. Cl. H03k *17/72*
U.S. Cl. 307—252 T 10 Claims



AC power control apparatus with reduced power dissipation is provided wherein a three terminal semiconductor switch, such as thyristor, has a gate driver circuit that includes a resistive impedance and a semiconductor device having a P-N junction connected in parallel with the resistive impedance.

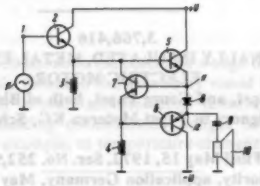
The semiconductor switch requires less gate current to initiate switching with higher temperature. The P-N junction exhibits a voltage drop thereacross that is inversely proportional to temperature so that a current through said resistive impedance is decreased with increased temperature.

3,766,410

STABILIZING CIRCUIT FOR STANDING CURRENTS

Dieter Elsaesser, Katzwang, Germany, assignor to EMV Elektro-Mechanische Versuchsanstalt Max Grundig, Furth/Bay, Germany

Filed Aug. 16, 1971, Ser. No. 172,079
Claims priority, application Germany, Aug. 20, 1970, P 20 41 345.0
Int. Cl. H03k 17/00
U.S. Cl. 307—255 10 Claims



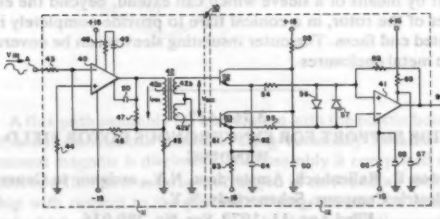
The standing current in series connected complementary transistors of a push-pull power stage is stabilized against fluctuations in temperature, supply voltage and/or changes in component use, by placing a current resistive element in series with the transistors in the path of the standing current. Voltage variations are developed across the resistive element in response to changes in the standing current caused by one more of the fluctuations. An electrode of an auxiliary transistor is connected between one of the complementary transistors and the resistive element to detect the voltage variations and modify the quiescent bias conditions in one of the series connected complementary transistors to counteract the effect of the changes.

3,766,411

PEAK DETECTOR

Raymond D. Arnold, Richardson, Tex., assignor to Intermedcraft Corp., Dallas, Tex.

Filed Nov. 27, 1970, Ser. No. 93,290
Int. Cl. H03k 5/20
U.S. Cl. 307—235 A 17 Claims



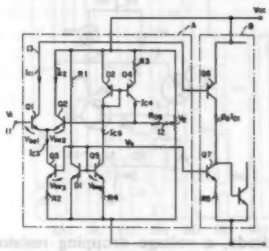
A detector for detection of the maximum and minimum peaks of an incoming signal employs a pair of operational amplifiers coupled by a transformer, the output from the secondary of the transformer being coupled through a pair of emitter follower networks to the input terminals of the second operational amplifier. A pair of diodes in parallel and opposite relationship are coupled across the input terminals of the second operational amplifier.

3,766,412

CIRCUIT FOR CONTROLLING THE PULSE WIDTH OF A MONOTONICALLY INCREASING WAVE FORM

Makoto Takahashi; Takao Hashimoto, and Akinori Takahashi, all of Tokyo, Japan, assignors to Yashica Co., Ltd. and Nippon Electric Company Limited, Tokyo, Japan

Filed Sept. 11, 1972, Ser. No. 287,777
Claims priority, application Japan, Sept. 14, 1971, 46/71913
Int. Cl. H03k 4/48, 5/04; H03f 3/18
U.S. Cl. 307—265 6 Claims



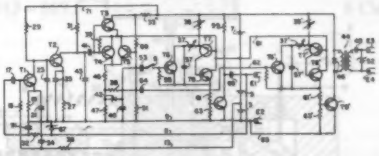
A differential amplifier having a pair of common emitter transistors for adjustably controlling the pulse width of a monotonically increasing wave form is provided with a resistor interposed between the control terminal and the base of the control transistor, and a constant current circuit connected between this base and the D.C. source for the control transistor, whereby a constant current supplied by the constant current circuit is caused to flow through the resistor.

3,766,413

RATE DISCRIMINATION CIRCUIT

Barouh V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 884,825, Dec. 15, 1969, Pat. No. 3,661,158. This application Jan. 3, 1972, Ser. No. 214,976
Int. Cl. H03k 5/13
U.S. Cl. 307—294 1 Claim

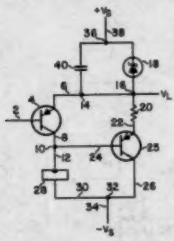


A rate discrimination circuit. A circuit is disclosed which discriminates between pulses occurring at a high rate and pulses occurring at a low rate on a pulse-by-pulse basis. The interval between successive pulses is used to control the extent of charging and discharging of a capacitor which in turn controls a switch. The circuitry can be used to discriminate against noise occurring at a 60 hertz rate. The circuitry is particularly useful in a demand cardiacpacer where the EKG signals contain near 60 hertz harmonics but occur at about a 1 hertz rate. Thus, the circuitry of the present invention is described in connection with its use in an atrial and ventricular demand pacer.

3,766,414
TECHNIQUE FOR DERIVING A REGULATED D-C SOURCE FOR LOW-LEVEL LOGIC CIRCUITS FROM A HIGH D-C VOLTAGE SOURCE

Tom L. Blackburn, San Jose, and Otto G. Wisotzky, San Francisco, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Feb. 16, 1972, Ser. No. 226,747
Int. Cl. H03k 17/00
U.S. Cl. 307—297 **4 Claims**

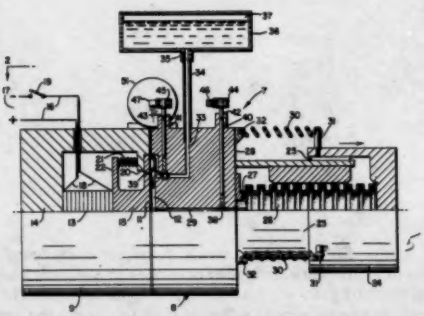


A Zener diode, a voltage dropping resistor, and a first transistor are connected in series across a primary d-c source. The emitter-collector junction is in the series path of the diode and resistor. A second transistor has one side of its emitter-collector junction connected to the junction of the Zener diode and resistor, and the other side connected both to the base of the first transistor and to one side of the load. The other side of the load is connected to one side of said source. A control signal applied to the base of the second transistor turns the transistor on or off. When the second transistor is turned off, the first transistor is turned on and the voltage dropping resistor is in the circuit. When the second transistor is on, the first transistor is turned off and the load replaces the voltage dropping resistor in the regulation circuit.

3,766,415
PIEZOLECTRIC ACTUATOR

Richard E. Dame, 224 Northwest Ter., Silver Spring, Md., and Ewald E. Schmidt, 9010 First St., Lanham, Md.

Filed Apr. 18, 1972, Ser. No. 245,234
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 **9 Claims**

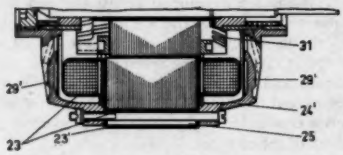


An ultra-sensitive actuator possessing substantial load carrying capacity and positioning range and which is capable of producing motions of 1 micro-inch or less with accuracy, which is thus especially adapted for supplying forces and displacements required to change the figures of mirrors and structural elements of optical equipment, such as, telescopes, including large space telescopes, optical polishing beds, mirrors for positioning devices, mirror deflection devices, mirror aspheric generators and electronic and optional tracking and positioning devices. The actuator includes a housing containing a piezoelectric stack consisting of oppositely oriented piezoelectric crystal discs arranged alternately in series to provide maximum expansion; a normally sealed chamber containing a liquid; a diaphragm dividing a portion of the housing containing the stack from the chamber, and an extensible housing end portion located at the end of the chamber disposed remote from the diaphragm. When a proper voltage is applied to the stack, it is extended to force the diaphragm into the sealed chamber for causing the liquid to exert a driving force against the extensible housing end portion for moving said end portion outwardly of the housing. An expansible bellows defines a part of the chamber and bears against the extensible end portion of the housing and together with the diaphragm amplifies the stack movement. Valves are provided for selectively trapping the displaced liquid for replenishing the liquid and for bleeding the chamber.

3,766,416
INTERNALLY INSULATED, METAL ENCLOSED ELECTRIC MOTOR

Hermann Papst, and Georg Papst, both of Black Forest, Germany, assignors to Papst-Motoren KG, Schwarzwald, Germany

Filed May 15, 1972, Ser. No. 252,975
Claims priority, application Germany, May 15, 1971, P 21 24 229.5
Int. Cl. H02k 1/04
U.S. Cl. 310—43 **10 Claims**



A layer of insulating material, preferably a tube of insulating material extends around the outside of the stator laminations, completely surrounding the stator laminations from end face to end face; pre-formed insulating end caps, in the form of hollowed rings cover the end loops of the windings extending beyond the stator to form, together with the insulating sleeve, a continuous insulating covering layer. The electromagnetically active elements of the rotor are insulated from the rotor shaft by means of a sleeve which can extend, beyond the end faces of the rotor, in a conical flare to provide completely insulated end faces. The outer insulating sleeves can be covered with metal enclosures.

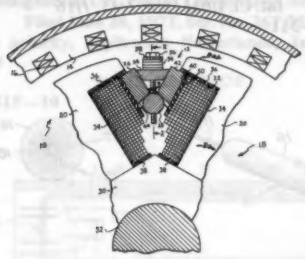
3,766,417
SIDE SUPPORT FOR SYNCHRONOUS ROTOR FIELD WINDING

Gordon R. Hallenbeck, Amsterdam, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 11, 1972, Ser. No. 280,016
Int. Cl. H02k 3/48
U.S. Cl. 310—214 **9 Claims**

The coil sides of a synchronous machine salient pole rotor are supported against the centrifugal forces encountered during operation by a coil support characterized by a wedge which is driven between side blocks overlying the coil sides on adjacent poles by screws engaged in a preferably cylindrical nut underlying the radially inner faces of the side blocks. The radially outer faces of the side blocks bear against the pole tips

to prevent centrifugal discharge of the coil support while lips are provided along both the side blocks and the insulation situated between the side blocks and the coil sides to prevent axial displacement of the coil support. A plurality of spring washers



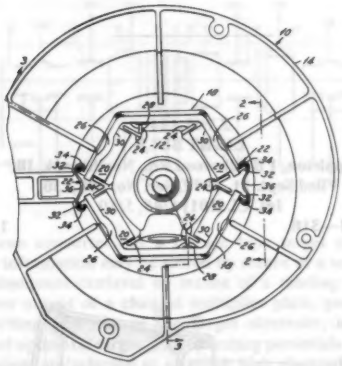
also are employed between the bolts and wedge to permit control of the tensile forces in the screws by visual inspection of the washers and to maintain the screw tension at a desired value notwithstanding dimensional changes in the coil assembly due, for example, to temperature changes in the coil.

3,766,418

PERMANENT MAGNET DYNAMOELECTRIC MACHINE FLUX PATH ASSEMBLY

Theodore G. Apostoleris, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 15, 1972, Ser. No. 306,777
Int. Cl. H02k *21/26*
U.S. Cl. 310—154 **9 Claims**



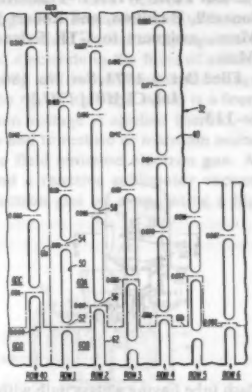
A flux path assembly for association with the plastic housing of a dynamoelectric machine using externally situated permanent magnets is disclosed. The assembly is comprised of at least two flux path members arranged in surrounding relationship with respect to the permanent magnets and the housing and which are retained in position by the cooperative association of at least two spring clip members and at least two inwardly projecting tabs arranged to engage with spaces provided therefor on the surface of the plastic housing. The spring clip member is provided with serrations or teeth arranged along convergent facing edges to engage outwardly projecting tabs on the flux path members and is provided with an inwardly projecting deformable segment to prevent overstressing of the plastic housing.

3,766,419

CATHODE-RAY TUBE WITH SHADOW MASK HAVING RANDOM WEB DISTRIBUTION

Robert Lloyd Barbin, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,244
Int. Cl. H01j *29/06, 1/52*
U.S. Cl. 313—92 B **15 Claims**



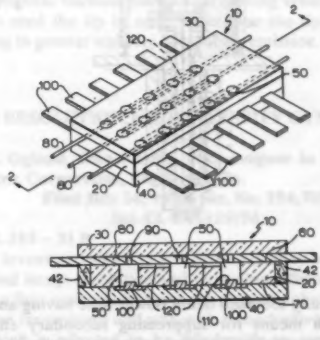
The problem of moire is eliminated by randomizing the vertical and horizontal pattern of webs between apertures of a shadow mask. A cathode ray tube is provided having a color phosphor screen structure comprising a plurality of arrays of substantially parallel lines. The lines in each array are adapted to emit light of a particular color. A shadow mask, having a plurality of substantially parallel rows of apertures that are elongated in the direction of the rows and separated from adjacent apertures in each row by webs, is spaced from the screen. The webs are randomly spaced along each row and the webs in adjacent rows are randomly displaced from one another in the direction of the rows. Alternatively, the web spacing in each row can be uniform and the rows randomly displaced from one another in the direction of the rows.

3,766,420

PANEL-TYPE DISPLAY DEVICE

James A. Ogle, Neshanic Station, and George E. Holz, North Plainfield, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Division of Ser. No. 850,984, Aug. 18, 1969, abandoned, and a continuation-in-part of Ser. No. 828,793, May 28, 1969, abandoned. This application Mar. 17, 1972, Ser. No. 235,706
Int. Cl. H01j *1/78*
U.S. Cl. 313—109.5 **8 Claims**



A display device comprising a panel structure including a plurality of gas-filled cells and including, within the body of

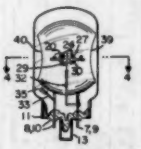
the panel, gas communication channels extending between selected cells to provide a selective flow of excited gaseous particles from certain cells to others to prime the receiving cells and thereby control the transfer of glow between the cells.

3,766,421

XENON FLASH TUBE WITH INTERNAL REFLECTOR

Robert P. Bonazoli, Hamilton, and Robert J. Cosco, Chelsea, both of Mass., assignors to GTE Sylvania Incorporated, Danvers, Mass.

Filed Oct. 4, 1971, Ser. No. 186,162
Int. Cl. H01j 17/12
U.S. Cl. 313—113 **10 Claims**



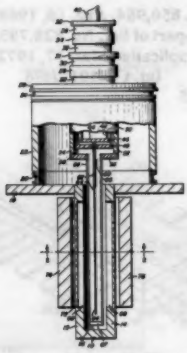
A xenon flash tube having a glass bulb within which an ellipsoidal reflector is supported so as to be spaced from the walls of the bulb. Anode and cathode electrodes in the bulb are located to provide an arc gap positioned near one focus of the reflector and are supported on wires held by an insulating button in the reflector. A fine wire trigger electrode is mounted in the bulb so that the free end thereof is disposed between the anode and cathode electrodes. In addition to xenon, a gaseous fill may include a dopant, such as helium, to increase the hold-off voltage and prevent self-ionization.

3,766,422

MAGNETIC TUBE ELECTRODE STRUCTURE

Barry M. Singer, New York, N.Y., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Division of Ser. No. 802,797, Feb. 27, 1969, Pat. No. 3,609,439. This application June 10, 1971, Ser. No. 151,912
Int. Cl. H01j 3/32
U.S. Cl. 313—160 **4 Claims**



A magnetically focussed beam power tube having an anode provided with means for suppressing secondary emission, which means comprises Faraday cage-type cavity structures having magnetic shielding for providing substantially magnetic-free regions within the cavities.

3,766,423

INTEGRAL EMISSIVE ELECTRODE

Richard A. Menelly, Danvers, Mass., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation-in-part of Ser. No. 149,972, June 4, 1971, abandoned. This application Dec. 3, 1971, Ser. No. 204,480
Int. Cl. H01j 1/14, 1/15, 1/16
U.S. Cl. 313—311 **7 Claims**

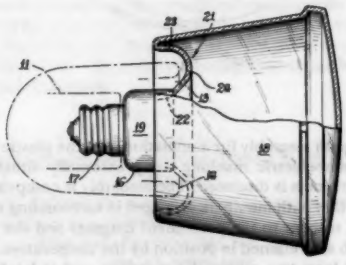
An emissive electrode of the type utilized in fluorescent lamps and a method for making such an electrode. The electrode includes a fused cylindrical pellet and two metal leads, a portion of one of said leads extending within one end of said pellet and a portion of the other of said leads extending within the opposite end of the pellet. The pellet contains a fused mixture of electron emissive material and a metal having a high melting point and a low vapor pressure, and it has a bulk density gradient structure. The heat necessary to cause thermionic electron emission from said electrode is provided by current passing through the pellet structure separating said leads when a voltage is applied across said leads. The pellet is formed by mixing a powder of said metal with a powder of said electron emissive material, adhering said powder particles one to the other, and heating said mixed powder in a mold until an exothermic reaction occurs.

3,766,424

LIGHT BULB

Arthur I. Appleton, 1 Bridlewood Rd., Northbrook, Ill.

Filed Sept. 11, 1972, Ser. No. 288,130
Int. Cl. H01j 5/48, 5/50
U.S. Cl. 313—318 **1 Claim**



The glass envelope of a light bulb curves about the open end of the housing within which the bulb socket is mounted so as to form a weather shield for that open end of the housing.

3,766,425
CONNECTION FOR THE SIGNAL PLATE OF A TELEVISION CAMERA TUBE

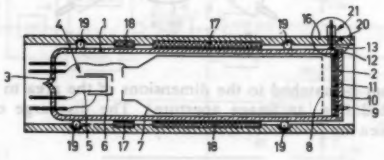
Alfonsus Augustinus Maria Didde, and Gerard Johannes Petrus Velenturf, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 267,253

Claims priority, application Netherlands, July 10, 1971, 71/09570

Int. Cl. H01j *31/26*

U.S. Cl. 315—10 4 Claims



The external contact with the signal electrode in a television camera tube is provided by means of an adapter plug arranged in a housing for the coils. The adapter plug is provided with standard parts at the end of the plug for shielding the conductor.

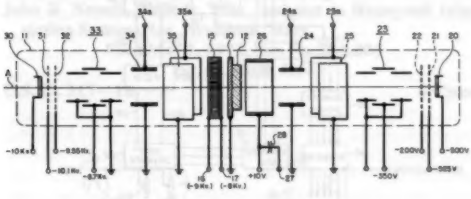
3,766,426
ELECTRON BEAM SCAN CONVERTER

Adolph J. Wolski, Morton Grove, Ill., assignor to Ni Tec, Inc., Niles, Ill.

Continuation of Ser. No. 838,573, July 2, 1969, abandoned. This application Feb. 12, 1971, Ser. No. 115,073

Int. Cl. H01j *29/41*

U.S. Cl. 315—12 14 Claims



A scan converter has a storage type target electrode in which information may be stored by means of a writing beam for subsequent retrieval by means of a reading beam. The electron output of a channel multiplier plate, positioned on the writing gun side of the target electrode, is proximity focused upon that target. The operating potentials of the writing system are selected to establish high electron velocity of the writing beam through the field of the writing beam deflectors to minimize transit time distortion and are further arranged to introduce a decelerating field at the input of the channel plate to attenuate the electron velocity to a value for optimum gain in that plate.

3,766,427
FIELD EMISSION ELECTRON GUN

Vincent J. Coates, Los Altos, and Leonard M. Welter, Saratoga, both of Calif., assignors to American Optical Corporation, Framingham, Mass.

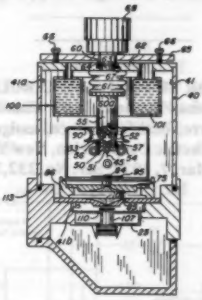
Continuation of Ser. No. 46,425, June 15, 1970, Pat. No. 3,678,333. This application Feb. 7, 1972, Ser. No. 224,362

Int. Cl. H01j *29/56*

U.S. Cl. 315—31 R 9 Claims

A field emission electron gun comprises a field emission tip as its source of electrons. A first anode is spaced downstream from the tip and when a voltage is applied between the first anode and the tip, electrons from the tip are accelerated toward the first anode. An opening in the first anode limits the angular spread of the electron beam. A second anode is spaced downstream from the first anode and when a voltage is applied between the second anode and the tip, the energy level of the electrons at the image or specimen plane is controlled. The electrostatic field between the first and the second anode brings the electron beam into focus.

For protecting the field emission tip against high voltage discharges, a third electrode in the form of a shield surrounds the field emission tip and is maintained at or near the electrical potential of the tip. Within the shield is a fourth electrode which serves, when voltage is applied thereto, to draw electrons from the tip and to restore or maintain normal operating conditions for the field emission electron gun. An ion-getter vacuum pump and a reactive sublimator vacuum pump are formed in the electron gun by evaporating a highly reactive



element or getter material on the inner walls of the third electrode, which serves as a collector by inducing gas molecules which strike this surface to adhere thereto and to be imbedded therein. The inner walls of the third electrode react with reactive gasses present in the region of the tip and the fourth electrode. The ion getter pump operates by ionizing residual gas molecules which are then impelled by electric fields and are imbedded under the coating of sublimed getter material. The primary electron beam from the tip strikes the surface of the fourth electrode, thereby causing reflected and secondary electrons to be emitted from the surface, which electrons form an electron cloud capable of ionizing molecules within the chamber. The electron cloud is formed and the ionized gas molecules are collected by applying the appropriate potentials to the electrodes in the gun assembly. The third electrode may be cooled by a liquid nitrogen cooling system, which functions as a cryogenic vacuum pump. This cooling system can also be used to cool the tip in order to reduce the tip flicker noise resulting in greater stability of electron emission.

3,766,428
HIGH RESOLUTION, HIGH INTENSITY CATHODE RAY TUBE

Jon W. Ogland, Glen Burnie, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

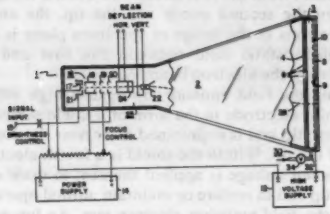
Filed July 24, 1972, Ser. No. 274,700

Int. Cl. H01j *29/56*

U.S. Cl. 315—31 R 4 Claims

This invention relates to a radiation display tube having an increased image resolution and recording efficiency and comprising a first evacuated chambers, a second chamber having a radiation transparent end wall with a conductive inner surface and which is adapted to be filled with an ionizable gas of desired constituency and pressure, and a gas tight, non-conducting interface wall positioned therebetween and having a plurality of discrete conducting elements extending

therethrough. Apparatus is provided in the first chamber for projecting and scanning an electron beam upon the interface wall which thereby causes a current to be conducted through



the interface whereby a sequence of arc discharges will occur in the second chamber. Means are also provided to vary the fill of the second chamber with gas of the desired constituency.

3,766,429

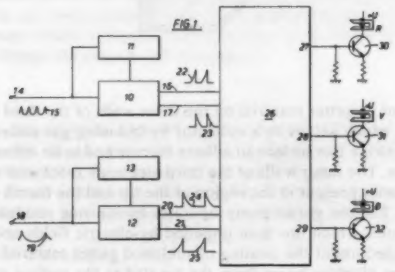
COLOR TV FOCUSING CIRCUIT

Jean Gabriel Vincent, Bagneux, and Claude Gabriel Jean Thevenin, Nanterre, both of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 7, 1972, Ser. No. 232,367

Int. Cl. H01j *31/04*

U.S. Cl. 315—31 R **4 Claims**



A circuit for the horizontal and vertical focusing of color television receivers. Parabolic voltages derived from the corresponding deflection voltages at line and frame frequencies are separated by switches into half-parabolas. The half-parabola voltages are applied to a receiver matrix circuit which, in turn, drives the color focusing coils, one pair of coils being provided for each color.

3,766,430

HIGH PRESSURE COMPACT ARC DISCHARGE LAMP FOR MULTIPHASE OPERATION

Horst Schlegel, Soecking, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

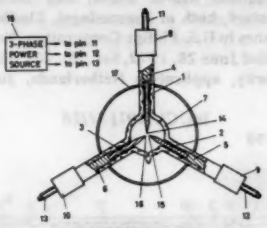
Filed Aug. 4, 1971, Ser. No. 168,926

Claims priority, application Germany, Oct. 8, 1970, P 20 49 524.3

Int. Cl. H01j *61/06*; H05b *41/00*

U.S. Cl. 315—147 **8 Claims**

A high pressure compact arc discharge lamp with an inert gas filling and which is combined with a reflector, includes three co-planar equivalent principal electrodes for multiphase operation. The electrode tips are located to form corners of an isosceles triangle lying within the discharge space of the lamp and are located at the center of curvature of the reflector which projects the discharge space. The upper electrode is vertically oriented and the spacing of the tips from one



another is matched to the dimensions of the area to be illuminated (e.g. an image aperture). The discharge currents between the electrodes are directly connected.

3,766,431

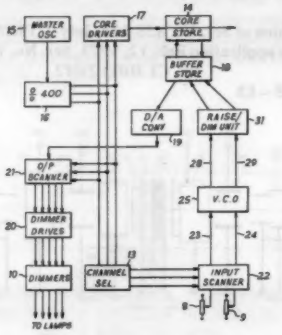
LIGHTING CONTROL SYSTEM INCLUDING AN ANALOGUE TO DIGITAL CONVERTER

Anthony Leonard Isaacs, London, W.C.2, England, assignor to Thorn Electrical Industries Limited, London, England

Division of Ser. No. 677,217, Oct. 23, 1967, Pat. No. 3,624,639. This application May 19, 1971, Ser. No. 144,850

Int. Cl. H05b *37/02*

U.S. Cl. 315—292 **4 Claims**



A lighting control system for stage and studio lighting applications wherein the system includes a digital to analogue converter connected to a digital store, a second store containing brightness control information for a plurality of lamps and an analogue to digital converter connected to the digital store for providing thereto a cyclic series of discrete signals of differing constant magnitudes.

3,766,432

ACTUATOR DRIVE CIRCUITRY FOR PRODUCING DUAL LEVEL DRIVE CURRENT

Ivan N. Markowitz, and Ernest Paul Lee, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.

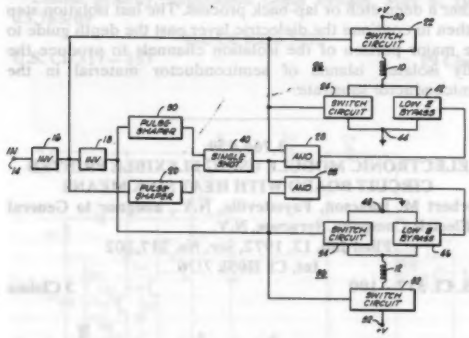
Filed Oct. 20, 1972, Ser. No. 299,554

Int. Cl. H01h *47/22*

U.S. Cl. 317—DIG. 6 **6 Claims**

Drive circuitry for a bi-directional solenoid actuator having first and second coils which are energized during mutually exclusive and complementary time periods. Each coil is in circuit with a low impedance bypass which is effective only for a short time after energization of the associated coil. While the bypass is effective, a relatively high current is applied to the

coil to seat the solenoid core. When the bypass is rendered ineffective, a relatively lower current is applied to the coil to hold the core in place. The circuitry also includes normally



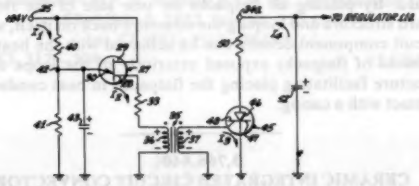
back-biased diodes which are driven to a forward-biased state upon coil de-energization to connect voltage sources to the coil to limit induced voltages to accelerate current decay in the de-energized coil.

3,766,433

CROWBAR CIRCUIT RESPONSIVE TO DECREASE IN THE POWER SUPPLY

John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed May 1, 1972, Ser. No. 249,285
Int. Cl. H02h 3/24
U.S. Cl. 317—16 **6 Claims**



A unijunction transistor, a capacitor, a transformer, an SCR and resistors provide an inexpensive crowbar circuit for use with a switching regulator. The crowbar circuit causes a voltage from the switching regulator to drop rapidly when the switching regulator is turned off.

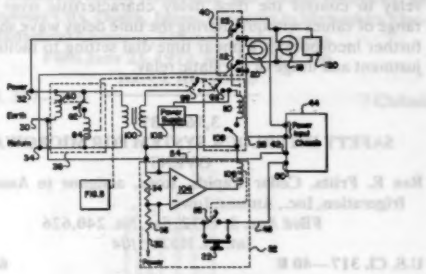
3,766,434

SAFETY POWER DISTRIBUTION SYSTEM

Stanley A. Sherman, 46 Stoneleigh Rd., Trumbull, Conn.

Filed Aug. 9, 1971, Ser. No. 170,021
Int. Cl. H02h 3/14
U.S. Cl. 317—18 A **7 Claims**

A safety power distribution system for ensuring that the chassis of an electrical apparatus is maintained at safety earth ground. If any condition develops which derogates from such



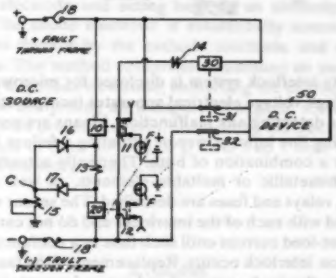
a guarantee, the safety power distribution system will block power from being supplied to the electrical apparatus.

3,766,435

SAFETY CIRCUIT

Kennie Childers, Box 251, Gary, W. Va.

Filed Jan. 15, 1973, Ser. No. 323,701
Int. Cl. H02h 3/16
U.S. Cl. 317—18 A **13 Claims**



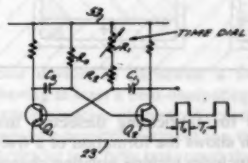
The safety circuit protects against ground fault hazards in a direct current machine actuated from a D. C. source and incorporates means for detecting current flow from each of positive and negative legs of the D. C. lines to ground, either simultaneously or individually, and provides an indication thereof. Interrupting means responsive to the detector indication disconnects the machine from the power source upon the occurrence of the ground fault. The circuit also provides protection against overloads.

3,766,436

MULTIVIBRATOR FOR STATIC RELAYS HAVING LINEAR TIME DIAL

Stanley E. Zocholl, Holland, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 27, 1972, Ser. No. 292,761
Int. Cl. H02h 3/08; H01h 47/18
U.S. Cl. 317—33 R **2 Claims**



A static relay utilizing an R-C network to provide a time current characteristic wherein inverse time-relationship is ob-

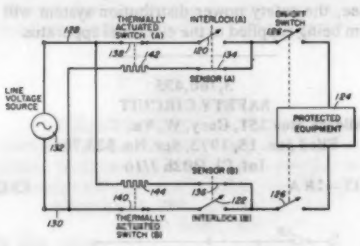
tained for appropriately controlling tripping or other protective operations in power transmission and distribution networks. A multivibrator clamp circuit is employed in the static relay to control the time delay characteristic over a large range of values without altering the time delay wave shape and further incorporates a linear time dial setting to facilitate adjustment and usage of the static relay.

3,766,437

SAFETY INTERLOCK SYSTEM FOR MICROWAVE OVENS

Rex E. Fritts, Cedar Rapids, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Apr. 3, 1972, Ser. No. 240,626
Int. Cl. H02h 5/04
U.S. Cl. 317—40 R **6 Claims**



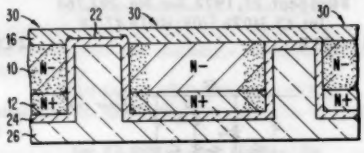
A safety interlock system is disclosed for microwave ovens or other high voltage electrical apparatus incorporating sensor means for detecting any malfunction. Means are provided for interrupting line input power or actuating a failure indicating device or a combination of both. Thermally actuated means, such as bimetallic or meltable elements, as well as circuit breakers, relays and fuses are described. The sensor means are associated with each of the interlocks and do not carry regular equipment-load current until such time as a malfunction of the companion interlock occurs. Replacement of the faulty equipment by authorized personnel and manual resetting of the interrupt or indicating means before the oven is energized again reduce the risk of accidental radiation, electrical shock or damage to the apparatus.

3,766,438

PLANAR DIELECTRIC ISOLATED INTEGRATED CIRCUITS

Paul P. Castrucci, and John W. Mason, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 644,601, June 8, 1967, Pat. No. 3,575,740. This application May 26, 1970, Ser. No. 40,656
Int. Cl. H01l 19/00
U.S. Cl. 317—101 A **2 Claims**



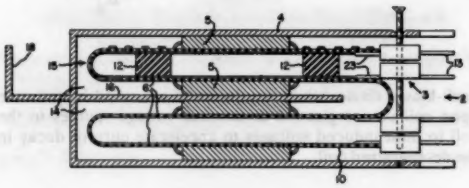
A method for fabricating dielectric isolated integrated devices which allows the formation of a truly planar surface. The method includes etching isolation channels in a semiconductor substrate through a suitable mask. The mask pattern is designed to enhance deeper etching at certain locations in the isolation channels. A dielectric layer is formed over the exposed surfaces of the isolation channels and a semiconductor material is grown in the channels. The deeper etched locations which are now filled with dielectric isolation are used as a depth guide in the formation of a dielectric layer from the semiconductor substrate surface opposite to the one from which the etching took place. The depth guide can be used in either a deep etch or lap-back process. The last isolation step is then to continue the dielectric layer past the depth guide to the major portion of the isolation channels to produce the fully isolated islands of semiconductor material in the semiconductor substrate.

3,766,439

ELECTRONIC MODULE USING FLEXIBLE PRINTED CIRCUIT BOARD WITH HEAT SINK MEANS

Herbert M. Isaacson, Fayetteville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,202
Int. Cl. H05k 7/20
U.S. Cl. 317—100 **3 Claims**



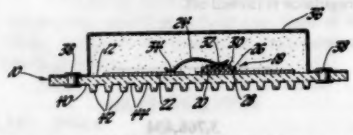
An electronic circuit component having particular utility in multi-layer circuit board construction formed essentially of a flexible dielectric sheet of material used as the board base to which is attached circuit runs etched from copper sheets clad to the dielectric sheet prior to etching. Generally, circuitry runs are separated according to alignment with either the X or Y axis with the runs on each side of the dielectric sheet being parallel to only one of those axes. Integration of communication between X and Y runs is by means of plated through holes to which circuit elements may be attached. Flatpack integrated circuits are attached to the board oriented with their covers toward and their heat sink base portions away from the board. By placing all flatpacks on one side of the flexible board structure and looping the structure back on itself, a high circuit component density can be achieved with the heat sink portions of flatpacks exposed exteriorly of the loops of the structure facilitating placing the flatpacks in heat conducting contact with a casing.

3,766,440

CERAMIC INTEGRATED CIRCUIT CONVECTOR ASSEMBLY

David M. Baird, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 11, 1972, Ser. No. 280,067
Int. Cl. H02b 1/00
U.S. Cl. 317—100 **2 Claims**



An integrated circuit assembly which includes a ceramic substrate for thick film power circuits having a cermet circuit pattern and semiconductor dies on one generally flat face and a convector surface configuration on the opposite face.

3,766,441

CONTROLLING AND MONITORING COMBUSTIBLE GASES

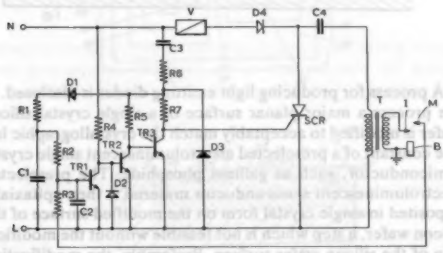
Stuart William Gray, Sutton, Surry, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1970, Ser. No. 35,852

Claims priority, application Great Britain, May 9, 1969, 23,763/69

Int. Cl. F23n 5/00

U.S. Cl. 317—157 19 Claims



Apparatus for monitoring and controlling the flow of a combustible gas includes a solenoid operated gas valve to control the gas flow. The solenoid is energized from an AC supply via a thyristor switch. When the gas is ignited an ionization current flows through the flame and is monitored to control the trigger electrode of the thyristor. When the flame is out the thyristor is not triggered so that it remains cut-off and deenergizes the solenoid. This closes the gas valve to cut off the gas flow. Triggering may take place through a phase advance circuit. Ignition sparks may be provided by means of a capacitor and a step-up transformer arrangement in which the capacitor is periodically discharged through the thyristor to produce spark pulses via the transformer.

3,766,442

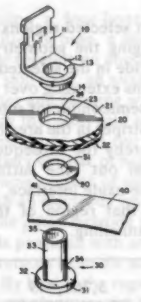
ELECTRICAL COMPONENT TERMINAL

Godfrey R. Pearce, and William J. Breeden, both of Glasgow, Ky., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Filed Feb. 4, 1972, Ser. No. 223,634

Int. Cl. H01g 9/10; H01r 9/14

U.S. Cl. 317—230 12 Claims



An electrical component terminal is provided utilizing a concentric extension foot and a cooperating fluted rivet whereby integral mechanical and electrical contact is achieved between the foot and the fluted rivet through the seal member in the component.

3,766,443

HIGH MOLECULAR WEIGHT SEMI-SOLID ELECTROLYTIC CAPACITOR

Shirow Asakawa; Sumio Nishiyama, and Katsue Hasegawa, all of Kadoma City, Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed June 23, 1972, Ser. No. 265,789

Int. Cl. H01g 9/00

U.S. Cl. 317—230 7 Claims

This invention is directed to a semi-solid electrolytic capacitor and a method for fabricating the same. The semi-solid electrolytic capacitor comprises an anode electrode having an oxide film thereon, a cathode electrode and a semi-solid electrolyte intervening between the anode electrode and the cathode electrode and acting both as an electrolyte and a spacer. The anode electrode is substantially surrounded on both sides thereof by the cathode electrode and is spaced therefrom. The method comprises assembling an anode electrode and a cathode electrode, immersing the electrodes in an electrolyte comprising an ionogen, an organic solvent and a cross-linkable polyamide resin, and heating the electrolyte at a temperature of from 80° to 120°C for 0.5 to 1 hour to form a semi-solid electrolytic capacitor.

3,766,444

SEMICONDUCTOR DEVICE HAVING AN INTEGRATED THERMOCOUPLE

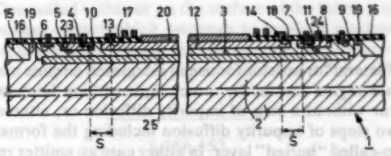
Gerrit Bosch, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,214

Claims priority, application Netherlands, Aug. 25, 1971, 7111653

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R 10 Claims



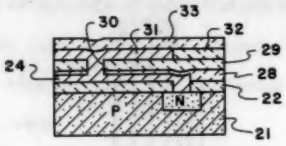
A semiconductor device, in particular a monolithic integrated circuit, having at least a heat-dissipating element and at least a temperature-sensitive element. According to the invention the temperature-sensitive element is a thermocouple. Application in particular in a fully integrated thermal oscillator in which the thermocouple signal is fed back in an amplified manner to a bistable heat dissipating element which as a result of this is switched to the other stable condition.

3,766,445

SEMICONDUCTOR SUBSTRATE WITH A PLANAR METAL PATTERN AND ANODIZED INSULATING LAYERS

James L. Reuter, East Fishkill, and Jagtar S. Sandhu, Fishkill, both of N.Y., assignors to Cogar Corporation, Utica, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,260
Int. Cl. H01l *11/00*, *15/00*
U.S. Cl. 317—235 R 1 Claim



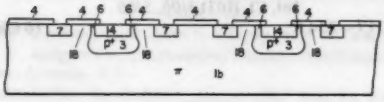
A silicon semiconductor substrate has on its planar surface a planar multilevel metal-insulator pattern that includes at least one layer comprising conducting metal and insulating material. The insulating material is a high purity, non-porous in-situ formed compound of the metal. The pattern is formed by blanketing a predefined, apertured, insulating layer located on the substrate surface with a metal film, forming an oxidation resistant mask over the film in a pattern which mirrors a desired to-be-formed circuit pattern and anodizing the exposed conductive film in an oxidizing ambient, thereby converting the exposed portions of the metal film to an insulating medium, leaving the metal beneath the mask in a desired circuit pattern separated by and/or embedded within the insulating medium.

3,766,446

INTEGRATED CIRCUITS COMPRISING LATERAL TRANSISTORS AND PROCESS FOR FABRICATION THEREOF

Tasudo Tarui, and Yoshio Komiya, both of Tokyo, Japan, assignors to Kogyo Gijutsuin, Tokyo, Japan

Filed Nov. 18, 1970, Ser. No. 90,672
Claims priority, application Japan, Nov. 20, 1969, 44/92513; Nov. 26, 1969, 44/94335
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 7 Claims



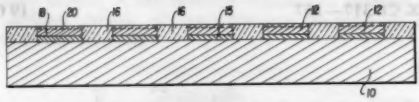
A "lateral" transistor for use in integrated circuits may have its base region formed by a technique of "ion implantation" with or without a step of impurity diffusion or, alternatively, by two steps of impurity diffusion including the formation of the so-called "buried" layer. In either case an emitter region is double-diffused into the base region simultaneously with collector diffusion, in such a manner that the base width of the lateral transistor is defined by a difference between the lengths of the double diffusion. The aforesaid ion implantation and buried layer techniques are utilized in the fabrication of integrated circuits incorporating such lateral transistors, in which base regions and isolation regions are formed at the same time. In other integrated circuits also disclosed herein, the lateral transistors together with or without field-effect transistors are isolated by means of substrate having higher resistivity than the base regions of the transistors.

3,766,447

HETEROEPITAXIAL STRUCTURE

Donald R. Mason, Indialantic, Fla., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed Oct. 20, 1971, Ser. No. 190,778
Int. Cl. H01l *19/00*; H05b *33/00*
U.S. Cl. 317—235 R 4 Claims



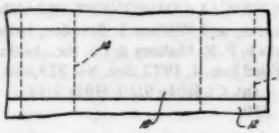
A process for producing light emitting diodes is disclosed. In the process a major planar surface of a single crystal silicon wafer is modified to acceptably match the crystallographic lattice constant of a preselected electroluminescent single crystal semiconductor, such as gallium phosphide. The preselected electroluminescent semiconductor material is then epitaxially deposited in single crystal form on the modified surface of the silicon wafer, a step which is not feasible without the modification of the silicon wafer surface. Preferably, the modification is achieved by epitaxially depositing a thin layer of semiconductor material whose lattice structure offers a substantially smaller disparity with the structure of the electroluminescent material than the existing disparity between the silicon wafer and the electroluminescent material.

3,766,448

INTEGRATED IGFET CIRCUITS WITH INCREASED INVERSION VOLTAGE UNDER METALLIZATION RUNS

Robert L. Luce, Los Altos Hills, Calif., and Earl S. Schlegel, Pittsburgh, Pa., assignors to General Instrument Corporation, Newark, N.J.

Filed Feb. 4, 1972, Ser. No. 223,610
Int. Cl. H01l *19/00*
U.S. Cl. 317—235 R 15 Claims



Inversion voltage in selected regions in an integrated array is increased by changing the geometry of the metallization overlying the thick oxide in the selected region. More particularly, metallization runs extending over functionally unrelated diffused regions in a semiconductor substrate are divided into a plurality of narrow stripes in the area between said unrelated diffused regions, whereby the subsequent alloying process is ineffective to "anneal out" the surface states or trapped charge at the substrate-oxide interface, thereby leaving a high inversion voltage at that region of the substrate so as to prevent unwanted channelling.

3,766,449

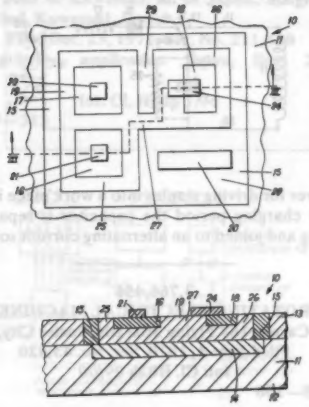
TRANSISTORS

Jeffrey Alan Bruchez, Hazel Grove, Cheshire, England, assignor to Ferranti Limited, Lancashire, England

Filed Mar. 27, 1972, Ser. No. 238,278
Int. Cl. H01l *9/00*
U.S. Cl. 317—235 R 11 Claims

A transistor having a high inverse gain value, and especially a multi-emitter transistor, is provided both with an additional

feedback emitter directly connected to the base and positioned adjacent to the base contact, together with a base re-



sistor portion between the region of the base having the base contact and the additional emitter and the region of the base in which each other emitter is formed.

3,766,450

THYRISTOR

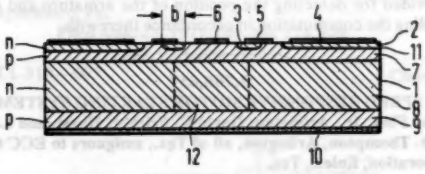
Peter Voss; Karl Platzoeder, and Alfred Porst, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 14, 1972, Ser. No. 280,214

Claims priority, application Germany, Aug. 16, 1971, P 21 40 993.8

Int. Cl. H01l *11/00*

U.S. Cl. 317—235 R **5 Claims**



A thyristor comprising a four-layer, monolithic device, which includes an emitter, a base, a second base below said base and a bottom layer forming an anode, a gate electrode on an exposed surface of said base, an auxiliary emitter laterally spaced from said emitter and forming with said base and said other layers an auxiliary thyristor, said second base having an area below the gate electrode and out to a point below an outer edge of the auxiliary emitter of higher impurity concentration than the remaining portion of said base. The auxiliary emitter is provided with an electrode which contacts its upper surface remote from the gate electrode and is in contact with the base. The emitter is provided with an electrode in contact with its upper surface remote from the auxiliary emitter and in contact with the base. By having the region of the second base underlying the gate electrode to a point below and inwardly of the outer edge of the auxiliary emitter of lower resistivity than that underlying the main emitter, the forward breakover voltage of the auxiliary thyristor is reached and the auxiliary thyristor ignited before any voltage is reached which would cause a direct triggering or gating of the main thyristor by a forward breakover voltage. The current flowing in the auxiliary thyristor thus causes a normal gating of the main thyristor as would be done by a gate electrode.

3,766,451

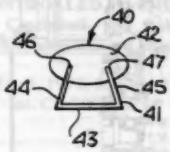
METALLIZED CAPACITOR WITH WIRE TERMINALS

Edward R. Voda, and Bernard A. Johnson, both of McCook, Nebr., assignors to TRW Inc., Los Angeles, Calif.

Filed Sept. 15, 1972, Ser. No. 289,208

Int. Cl. H01g *1/14*

U.S. Cl. 317—260 **4 Claims**



Terminal units for metallized capacitors. A capacitor utilizing metallized dielectric layers is convolutely wound into a compact unit having a pair of regions represented by metallized layers separated by the dielectric. Each transverse end of the convolutely wound layers provide a region for making electrical contact thereto. Sturdy terminal units having predetermined geometry are coupled to the segregated metallized regions, the terminal units adapting the capacitor for use with automatic insertion equipment and reflow soldering techniques.

3,766,452

INSTRUMENTED TOKEN

Lee E. Burpee, 77 New Castle Cir., Goleta, Calif.; Charles D. Burpee, 4224 El Cid Way, Los Vegas, Nev., and Donald A. Paynter, 5944 Via Lemora, Goleta, Calif.

Filed July 13, 1972, Ser. No. 271,456

Int. Cl. G07f *1/06*

U.S. Cl. 317—262 R **4 Claims**

Disclosed is an instrumented token or chip representative of value. Concealed within or on the surface of the token is a passive resonant circuit which responds to incident electromagnetic radiation in a preselected frequency to produce and radiate a unique detectable signal indicative of the token's presence in the incident field.

3,766,453

STARTER DRIVE FOR COMBUSTION ENGINES

Josef Schenk, Campinas, Brazil; Christian Von Ehrenstein, Ludwigsburg-Hubeneck, Germany, and Luiz Carlos Moreira, Campinas, Brazil, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 3, 1972, Ser. No. 240,642

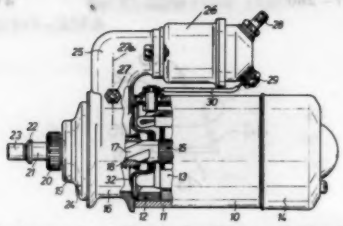
Claims priority, application Germany, Apr. 2, 1971, P 21 16 052.1

Int. Cl. H02k *5/10*

U.S. Cl. 310—88 **6 Claims**

A housing has an opening and accommodates an electric starter motor whose output shaft extends outside through the

opening. Connected at the opening is a gear unit cooperating with the output shaft, and located in the opening to protect the interior of the housing against the entry of contaminants is a cupped insert a flange of which is connected with the housing



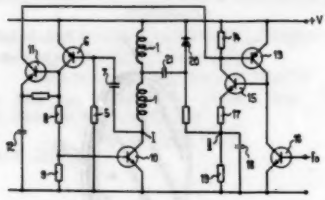
and a transverse wall of which has an opening through which the motor output shaft extends and which is sealed by a sealing ring in sealing engagement with the transverse wall and with the output shaft which the sealing ring surrounds.

3,766,454

ELECTRONIC TIMEPIECE

Jean-Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., Berne and Bernad Golay, Lausanne, both of, Switzerland

Continuation of Ser. No. 53,348, July 16, 1970, abandoned.
This application Mar. 14, 1972, Ser. No. 234,588
Claims priority, application Switzerland, Aug. 12, 1969, 12228/69
Int. Cl. H02k *33/14*
U.S. Cl. 318—128 **5 Claims**



An electronic timepiece having a reference oscillator and a vibrating motor having resonance frequency driven at a frequency synchronized by said resonance frequency, the resonance frequency of said vibrating motor being continuously adjusted by means of a variable condenser electromechancially coupled therewith such that the oscillation of the vibrating motor remains in phase with the reference frequency. The electric energy required for driving the vibrating motor is in this way kept at a minimum. Control of said variable condenser is effected electronically by means of a phase detector controlled by the reference oscillation and the oscillation of the vibrating motor.

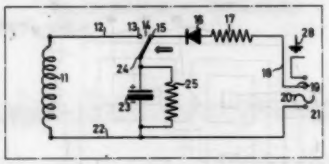
3,766,455

ELECTROMAGNETICALLY OPERATED STAPLER

Czeslaw Zakrewsky; Werner Taubken, and Erwin Muller, all of Lingen/Ems, Germany, assignors to Erwin Muller, Lingen, Germany

Filed Aug. 9, 1972, Ser. No. 278,973
Claims priority, application Germany, Aug. 20, 1971, P 21 41 776.5; June 2, 1972, P 22 26 788.5
Int. Cl. H02p *1/18*; B27f *7/22*
U.S. Cl. 318—135 **14 Claims**

The operating winding of an electromagnetically operated stapler is in the period of time during the working stroke connected with a capacitor the discharge current of which energizes said winding with a strong current surge whereby a high



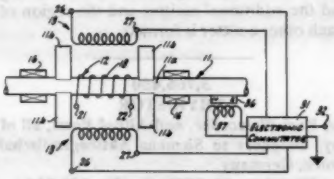
impact power for driving staples into a work piece is achieved. During the charging period the capacitor is separated from said winding and joined to an alternating current source.

3,766,456

ROTATING ELECTRICAL MACHINE

Donald W. Carow, 167 Flying Mist Isle, Foster City, Calif.

Filed June 4, 1970, Ser. No. 43,420
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 **5 Claims**



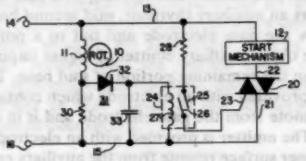
Brushless rotating machine having a fixed winding for producing a magnetic field in the rotating armature or rotor. A plurality of stator windings is provided around the armature, and a rotating magnetic field is produced in these windings by a non-mechanical commutator. A non-mechanical sensor is provided for detecting the position of the armature and controlling the commutation in accordance therewith.

3,766,457

SPEED RESPONSIVE MOTOR STARTING SYSTEM

Leon Fink, Jr., Arlington; David C. Fricker, Hurst, and Larry D. Thompson, Arlington, all of Tex., assignors to ECC Corporation, Euless, Tex.

Filed Mar. 12, 1971, Ser. No. 123,737
Int. Cl. H02p *1/44*
U.S. Cl. 318—221 E **15 Claims**



An electronic switching circuit for controlling the start operation of a single phase induction motor in accordance with the speed of the motor. A bilateral solid state switching device is connected in series with the motor starting reactance for activating and disabling same. A current-sensing element is coupled in circuit with the motor run winding for controlling the operation of a reed relay. When closed, the reed relay passes gating current to the solid state switching device for enabling activation of the motor starting reactance.

3,766,458

SYSTEM FOR DRIVING A SELF-EXCITED PULSE MOTOR IN ACCORDANCE WITH THE MOVEMENT OF THE ROTOR

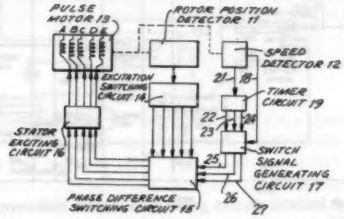
Tohru Nishimura, Akashi, Yoshitoshi Kibe, and Yasuhiko Yokoshi, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 23, 1971, Ser. No. 211,430

Claims priority, application Japan, Dec. 28, 1970, 45/124616

Int. Cl. H02p 5/16

U.S. Cl. 318—313 3 Claims


PULSE MOTOR 13
A B C D E
ROTOR POSITION DETECTOR 11
SPEED DETECTOR 12
EXCITATION SWITCHING CIRCUIT 14
TIMER CIRCUIT 19
STATOR EXCITING CIRCUIT 16
SWITCH SIGNAL GENERATING CIRCUIT 17
PHASE DIFFERENCE SWITCHING CIRCUIT 15

A driving circuit of a self-excited pulse motor controls the stator in accordance with the movement of the rotor. The driving circuit includes a phase difference switching circuit for switching the phase difference between the phase of the motor and the exciting phase of the stator in correspondence with the speed of rotation of the rotor. The phase difference is switched every time that the speed of rotation reaches a predetermined speed, thereby compensating for the reduction of the torque during high speed rotation based on the time lag of an exciting signal in a feedback loop.

3,766,459

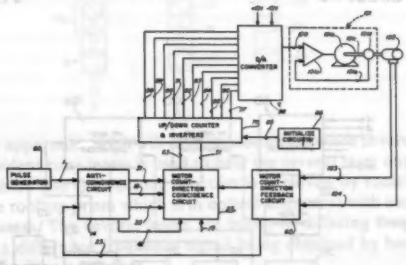
ELECTRONIC STEPPING DRIVE FOR DC TORQUE MOTOR

Michael D. McIntosh, Greencastle, and Donald K. Scott, Jr., Zullinger, both of Pa., assignors to Landis Tool Company, Waynesboro, Pa.

Filed Aug. 25, 1971, Ser. No. 174,840

Int. Cl. G05b 19/28

U.S. Cl. 318—603 5 Claims



A control system for a machine tool having a direct current motor capable of rotating the motor shaft in a series of discrete steps through a range and maintaining the shaft in position between the steps. The motor is controlled by a digital to analog converter which receives an input having a bi-directional digital counter. A pulse generator inputs a preselected number of pulses in a preselected direction; an encoder responsive to the angular position of the motor shaft produces a fixed number of pulses for a given rotation, and the pulses count the counter in a direction related to the direction of movement of the motor shaft. Circuitry is provided both to match a directional signal with each pulse to control the counter direction and also for buffering all of the pulses to prevent more than one pulse from reaching the bi-directional digital counter at substantially the same time.

3,766,460

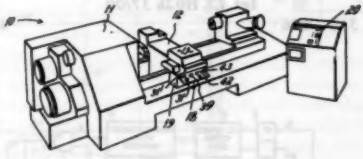
MANUAL CONTROL SYSTEM FOR NUMERICALLY CONTROLLED MACHINE

Thomas E. Hentz, Cincinnati, and Robert K. Burroughs, Batavia, both of Ohio, assignors to LeBlond Inc., Cincinnati, Ohio

Filed May 3, 1972, Ser. No. 250,076

Int. Cl. G05b 11/18

U.S. Cl. 318—571 28 Claims



A manual control system including a powered feed for a numerically controlled machine tool. The system includes a manually operable differential resolver located in the position feedback loop of the servo control system for each slide and a variable speed motor for driving that differential resolver at a controlled rate so as to effect controlled feeding movement of the slides independent of the numerical control unit.

3,766,461

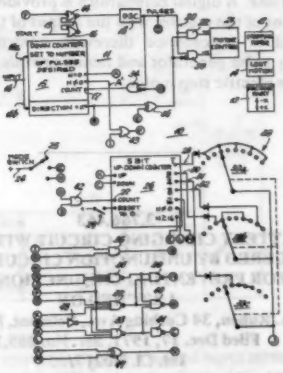
BACKLASH COMPENSATION CIRCUIT FOR NUMERICALLY CONTROLLED STEPPING MOTOR DRIVEN MACHINE

Albert C. Leenhouts, Harwinton, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed Oct. 4, 1971, Ser. No. 186,015

Int. Cl. G05b 11/01

U.S. Cl. 318—630 4 Claims



A circuit for use with a numerically controlled machine having lost motion or backlash between a moved part and a stepping motor which enables selection of (1) no backlash compensation, (2) backlash compensation by moving the part

to each final position in the same direction or (3) backlash compensation by adding the exact amount of backlash each time the movement of the part is reversed. The circuit has a counter which in selection (2) adds and subtracts a movement greater than the actual backlash while in selection (3), the counter is set to provide the exact amount of backlash and also have its condition used to determine when backlash compensation is required.

3,766,462

RAPID FEED CONTROL FOR AN ELECTRIC STEP MOTOR

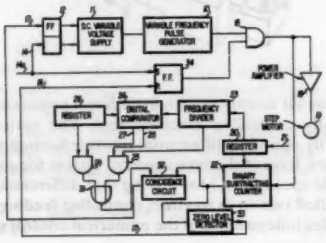
Moritada Kubo, Tokyo, and Yukiharu Takahashi, Yokohami, both of Japan, assignors to Tokyo Shibaura Electric Company, Limited, Kawasaki-shi, Japan

Filed Dec. 30, 1971, Ser. No. 214,308

Claims priority, application Japan, Dec. 30, 1970, 45/122943

Int. Cl. H02k *37/00*

U.S. Cl. 318—696 **4 Claims**



An electric step motor is energized from a variable frequency pulse generator such that feed pulses of a gradually increasing frequency are applied to the step motor during the starting thereof and feed pulses of a gradually decreasing frequency are applied to the step motor during a reduction in the speed thereof. A frequency divider is provided for obtaining a value corresponding to one half or N/2 of a total feed of pulses N. A register is also provided for storing pulses N_m which correspond to the number of feed pulses present during an interval for controlling the step motor from a maximum speed to a minimum one. A digital comparator is provided for comparing the content of the register with the output of the frequency divider and in accordance therewith controls the variable frequency pulse generator and hence provides a speed reduction in the electric step motor.

3,766,463

BATTERY CHARGING CIRCUIT WITH SCR'S TRIGGERED BY UNIJUNCTION CIRCUITS HAVING MEANS FOR PREVENTING UNIJUNCTION FROM BEING LATCHED ON

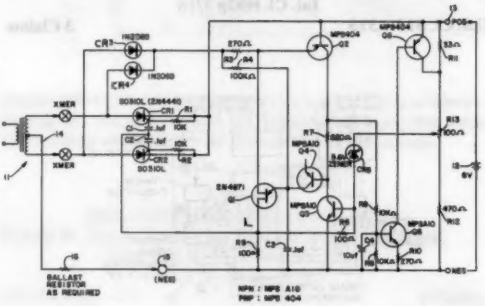
Murray A. Ruben, 34 Cushing Ave., Belmont, Mass.

Filed Dec. 17, 1971, Ser. No. 209,189

Int. Cl. H02j *7/10*

U.S. Cl. 320—23 **12 Claims**

A circuit for battery charging includes an SCR that is periodically gated on for a duration corresponding to the state of charge of the battery, being gated on for only a short interval when the battery is essentially fully charged to keep it charged. The conduction angle is determined from the open-circuit battery potential and the previous charging history of the battery obtained from potential sensing circuits. A pedestal and cosine modified ramp circuit triggers the SCR's through capacitors with a resistor intercoupling the SCR gate and cathode electrodes. Circuitry prevents the unijunction transistor in the latter circuit from remaining latched on. A potential control circuit for determining the rate of charge in-



cludes a resistor connected to the output terminal that is bypassed when the average value of the signal on the collector of a transistor having its base connected to the output terminal exceeds a predetermined value. Diodes intercouple the SCR's and the emitter of the latter transistor for providing operating potentials to the circuits and a starting charging current to the output terminal when a connected battery is fully discharged.

3,766,464

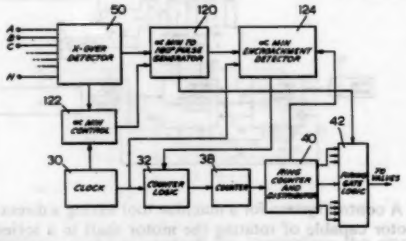
SELECTION OF A REFERENCE VALVE IN A CONVERTER UNDER SPECIAL OPERATING CONDITIONS

John Reeve, Waterloo, Ontario, Canada, assignor to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Oct. 30, 1972, Ser. No. 301,973

Int. Cl. H02m *7/20*

U.S. Cl. 321—5 **2 Claims**



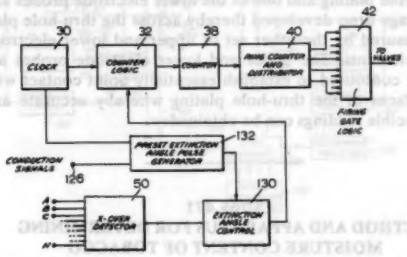
This invention relates to a firing circuit control for prevention of premature firing of valves in a converter. The control circuit prohibits the firing of valves before a predetermined minimum firing angle.

3,766,465

ELECTRICAL APPARATUS TO CONTROL THE EXTINCTION ANGLE OF VALVES OF A CONVERTER

John Reeve, Waterloo, Ontario, Canada, assignor to Westinghouse Canada Limited, Hamilton, Ontario, Canada

Filed Oct. 30, 1972, Ser. No. 302,057
Int. Cl. H02m 7/20
U.S. Cl. 321—5 3 Claims



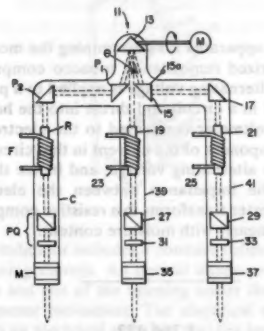
This invention relates to a firing circuit control for prevention of premature firing of valves in a converter. The control circuit prohibits the firing of valves before a predetermined minimum firing angle.

3,766,466

DEVICE FOR SIMULTANEOUSLY Q-SWITCHING SEVERAL INDEPENDENT RUBY LASERS

Dillard W. Faries, Glen Ellyn, Ill., and Yuen R. Shen, Berkeley, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,444
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 3 Claims



An apparatus which will simultaneously Q-switch several independent ruby lasers is used to beat the several laser outputs together. The Q-switching function is achieved by rotating a single rooftop prism which is in optical alignment with each of the lasers. The several lasers are tuned to differing frequencies, a difference frequency signal being obtained by beating the two signals together.

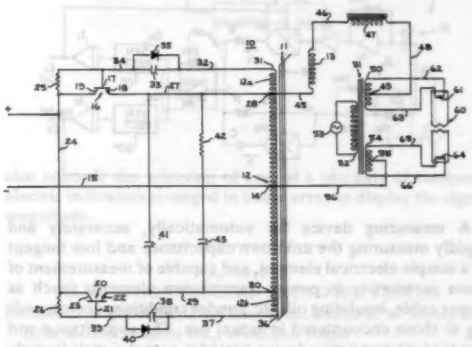
3,766,467

INVERTER - OSCILLATOR

Flavian Reising, Jr., Fort Wayne, Ind., assignor to General Electric Company, Indianapolis, Ind.

Filed Jan. 12, 1972, Ser. No. 217,161
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R 6 Claims

An inverter - oscillator for providing AC electric energy to a load, such as a gas tube discharge device, from a source of DC electric energy. The inverter - oscillator circuit arrangement includes a saturable core transformer having a primary winding a secondary winding, and additional windings. The emitter of each of a pair of power transistors is connected to the primary winding on opposite sides of a primary winding center tap. The base of each of the transistors is connected to its emitter through an additional winding. A conduction control capacitor is connected between the base and the additional winding and is shunted by a rectifier poled to limit the charge on the capacitor of a polarity tending to turn on the cor-



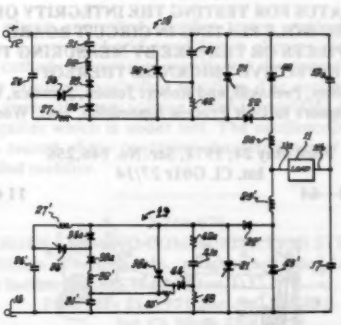
responding transistor. A tuning capacitor is connected across the primary winding. The collector of each of the transistors is connected to a regulated source of DC electric energy and the base of each transistor is connected to the source through a resistance. The secondary winding of the transformer is connected to a load, such as a gas tube discharge device, through a linear inductance. The gas tube discharge device may also be connected through a second transformer to a source of AC electric energy for providing power to the filament heaters of the tube.

3,766,468

INVERTER CIRCUIT

Gilbert I. Cardwell, Jr., Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Feb. 1, 1972, Ser. No. 222,523
Int. Cl. H02m 7/48
U.S. Cl. 321—43 8 Claims

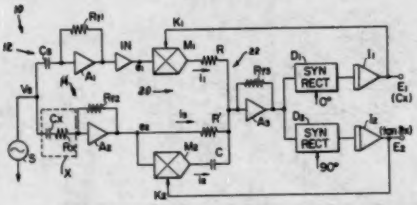


In an inverter circuit including a pair of input terminals with a constant potential difference therebetween, a gate-controlled diode connected between each input terminal and a load terminal, the combination of an inductor to limit the rate of current rise in each diode, a capacitor in parallel with each diode to limit the rate of voltage rise across each rectifier, and a means of recovering the stored energy in the capacitor.

3,766,469
CAPACITANCE AND LOSS TANGENT MEASURING APPARATUS

Hisao Nakane, Tokyo, Japan, assignor to Yokogawa Electric Works, Ltd., Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,600
Claims priority, application Japan, July 2, 1971, 46/48559
Int. Cl. G01r 11/52, 27/26
U.S. Cl. 324—60 C 12 Claims

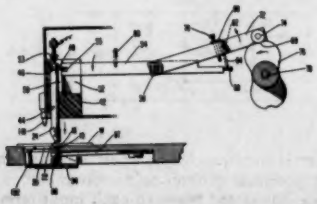


A measuring device for automatically, accurately and rapidly measuring the unknown capacitance and loss tangent of a sample electrical element, and capable of measurement of these parameters in power transmission elements (such as power cable, insulating oil, etc.) under conditions corresponding to those encountered in actual use. The capacitance and loss tangent measuring device provides output signals linearly related to the desired parameters from a circuit which comprises: a power source for imposing selected measuring conditions of current and voltage on the sample element to be measured, an operational amplifier circuit for providing a first voltage which is proportional to the voltage drop across said sample and which has a substantially perpendicular phase relation with said voltage drop, another circuit means for providing a second voltage which is proportional to the current flowing through said sample and which has a substantially parallel phase relation with said current, and an automatic balancing circuit, operating in accordance with the steepest descent method and responsive to the first and second voltages, for deriving by means of synchronous rectifiers and integrators two d.c. output signals from perpendicular components of an intermediate summation signal and for negatively feeding back the output signals to input multipliers receiving the first and second voltages to attain a balanced state in which the two output signals have a linear relationship with the capacitance and loss tangent of the sample element.

3,766,470
APPARATUS FOR TESTING THE INTEGRITY OF A THRU-HOLE PLATING IN CIRCUIT BOARD WORKPIECES OR THE LIKE BY MEASURING THE EFFECTIVE THICKNESS THEREOF

William D. Hay, Peekskill, and Robert Jensen, Jamaica, both of N.Y., assignors to Unit Process Assemblies, Inc., Woodside, N.J.

Filed May 24, 1971, Ser. No. 146,256
Int. Cl. G01r 27/14
U.S. Cl. 324—64 11 Claims

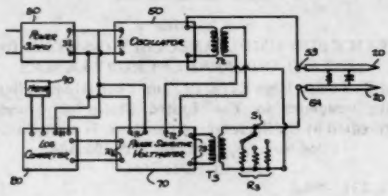


An apparatus is provided for testing the integrity of thru-hole plating in printed circuit boards by measuring the effective thickness thereof. A printed circuit board is adapted to be positioned on a work surface of the apparatus with the plated thru-hole to be measured disposed at an operating location. A spaced pair of electrode probe are displaced downwardly along a predetermined path into engagement with the top defining edges of the plated thru-hole. A second spaced pair of electrode probe elements engage the bottom defining edges of the thru-hole whereby a predetermined magnitude of constant current can be passed through one of the upper electrode probes, the plating and one of the lower electrode probes and the voltage drop developed thereby across the thru-hole plating measured by the other set of upper and lower electrode probe elements. The upper and lower electrode probes are suitably contoured to establish essentially point contact with the surfaces of the thru-hole plating whereby accurate and reproducible readings can be obtained.

3,766,471
METHOD AND APPARATUS FOR DETERMINING MOISTURE CONTENT OF TOBACCO

James O. Pullman, Chapel Hill, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,577
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R 15 Claims



A method and apparatus for determining the moisture content of freshly prized remoistened tobacco compressed into hogs-heads. An alternating voltage is applied to a pair of electrodes connected in a circuit and thrust into the hogshead. A phase sensitive voltmeter connected to the electrode circuit measures the component of the current in that circuit which is in phase with the alternating voltage, and hence the resistive component of the impedance between the electrodes. A logarithmic converter transforms this resistive component into a signal varying linearly with moisture content.

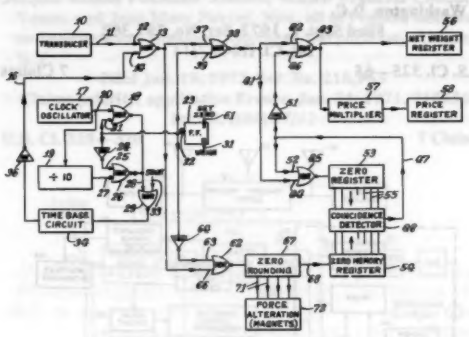
3,766,472
APPARATUS FOR ELIMINATION OF ERROR IN A DETECTING SYSTEM

John A. Whitney, Fort Wayne, Ind., assignor to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Nov. 2, 1971, Ser. No. 194,981
Int. Cl. G01r 23/02; G01g 3/14
U.S. Cl. 324—78 D 10 Claims

This disclosure deals with a system wherein the frequency of a signal having a variable frequency representative of a parameter is measured in order to make a determination of the parameter. The frequency of the signal is measured during a normal measuring mode of operation by counting the number of cycles of the signal occurring within a fixed time base. Prior to the normal measuring mode of operation, the operator initiates a set zero mode of operation, wherein the resolution of the measurement is increased by a predetermined ratio. At this increased resolution, any portion of a cycle, which is present but which would not be counted during

the normal measuring mode of operation, is detected and is utilized to actuate a circuit for adjusting the frequency. The

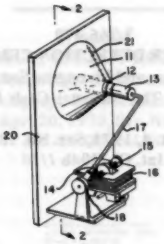


frequency is adjusted either upwardly or downwardly so that an integral number of whole cycles occurs during the time base, thereby eliminating said portion of a cycle.

3,766,473
VISUAL INDICATOR FOR AN ELECTRICAL METER MOVEMENT

Hobart H. Fleetman, Lansdale, Pa., assignor to Electro-Mechanical Instrument Co., Inc., Perkasie, Pa.

Filed Mar. 31, 1972, Ser. No. 239,913
Int. Cl. G01r *19/00*; G02b *27/02*, *17/04*
U.S. Cl. 324—96 **9 Claims**



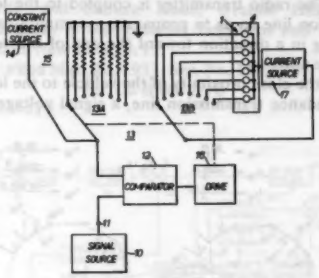
A visual indicator includes a concave reflecting surface having an opening therein. An optical image-producing element moves into and out of the opening under the guidance of an electrical meter movement. The electrical meter movement responds to an electrical signal so that the image produced by the visual indicator is related to the magnitude of the electrical signal applied to the meter movement.

3,766,474
SIGNAL INDICATOR SYSTEMS

William MacDonald, Letchworth, England, assignor to Vernon Instruments Company Limited, Letchwork, Hertfordshire, England

Filed Sept. 28, 1972, Ser. No. 294,543
Int. Cl. G01r *17/06*, *13/02*
U.S. Cl. 324—99 D **13 Claims**

A signal magnitude indicator system includes polarity responsive means whereby a signal of other than predetermined polarity is inverted before being applied to a comparator in which it is compared with a temperature-compensated reference potential developed across a selected one of a plurality of resistors. Any error signal developed by the comparator controls a selector means to change the selection of resistor until the compared signals are alike. The selector means

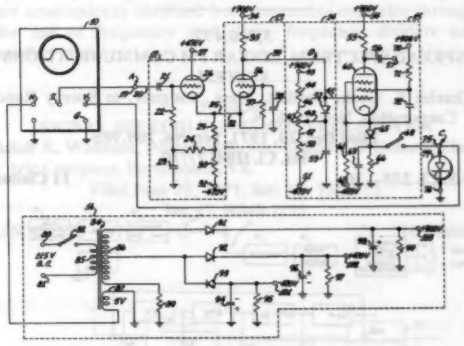


also controls the selection of one of a plurality of luminous electric indicators arranged in linear array to display the signal magnitude.

3,766,475
SILICON CONTROLLED RECTIFIER TESTER

Roland E. Ripplinger, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Sept. 21, 1972, Ser. No. 291,121
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 SC **8 Claims**



The silicon controlled rectifier tester employs an oscilloscope, a grounded-grid amplifier, a clipping circuit and a pair of cathode followers to rapidly test the operating characteristics of silicon controlled rectifiers. The oscilloscope provides a sawtooth signal voltage which is amplified and applied to a rectifier which is under test. The oscilloscope also provides a record of the operating characteristics of the silicon controlled rectifier.

3,766,476
HIGHWAY RADIO COMMUNICATION SYSTEM

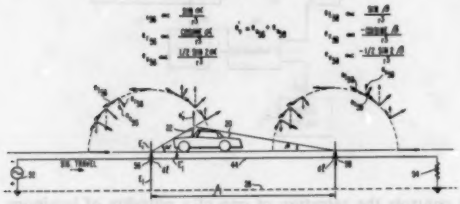
Peter Silitch, Riverdale, Mo., assignor to United Communications Industries, Inc., Washington, D.C.

Filed May 21, 1971, Ser. No. 145,851
Int. Cl. H04b *7/04*
U.S. Cl. 325—26 **20 Claims**

Apparatus for enhancing radio frequency signal communications between a vehicle moving along a path of travel and an AM radio transmitter where there is a requirement for restricted signal power radiation in the vicinity of the apparatus. This is accomplished by utilizing a relatively high impedance longitudinal transmission line laid along a path of travel beneath the vehicle which includes a radio receiver hav-

ing one input signal terminal attached to the metal frame of the vehicle while the other terminal is connected to an electric whip antenna mounted on and generally toward one end of the vehicle. The radio transmitter is coupled to the longitudinal transmission line so as to propagate a communication signal therealong in a direction toward the end of the vehicle containing the antenna.

Due to the close proximity of the vehicle to the longitudinal high impedance transmission line, a signal voltage is capaci-



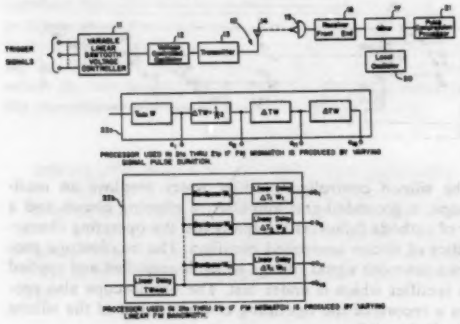
tively induced from the transmission line to the vehicle frame and to the input signal terminal attached thereto due to the voltage on the conductor with respect to a ground plane while the current flowing in the transmission line and the shielding effect of the vehicle over the transmission line give rise to radial and tangential electric induction field components at the antenna which causes a resultant signal voltage component to be coupled to the other receiver input signal terminal which aids the signal voltage induced on the vehicle frame thereby increasing the input signal level to the receiver.

3,766,477

SPREAD SPECTRUM, LINEAR FM COMMUNICATIONS SYSTEM

Charles E. Cook, Carlisle, Mass., assignor, to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 20, 1971, Ser. No. 209,985
Int. Cl. H04l 27/10
U.S. Cl. 325—30 **11 Claims**



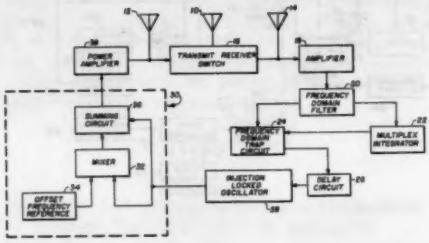
A pulse compression system comprising a transmitter which provides a maximum number of output signals from a class of linear waveforms in which the number that may be used is a function of the desired cross-talk performance which depends on the signal time-bandwidth product and the FM slope differences between the signals. The transmitter includes a plurality of linear FM generators and associated modulation oscillators to provide the number of different signals desired. A receiver responsive to the number of different transmitted signals includes a corresponding number of mixers and local oscillators coupled to pulse compression filter means having optimum response characteristics matched to the number of signals that are transmitted thereby enabling a significant increase in the number of signals which may be transmitted and received by the disclosed communications system.

3,766,478

BACKSCATTER REDUCTION APPARATUS

Ray B. Lowry, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 8, 1972, Ser. No. 287,302
Int. Cl. H04b 7/14
U.S. Cl. 325—65 **7 Claims**



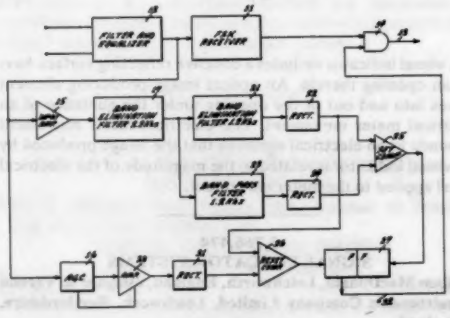
Apparatus for reducing F_1/F_1 repeater backscatter without significantly changing the desired received signal. A replica signal of the desired transmitted signal on center frequency F_1 is transmitted on center frequency F_2 to produce a received signal on frequency F_2 which is predominantly due to backscatter from the transmission on F_2 and which has a very high correlation with the backscatter from the desired transmitted signal on F_1. The characteristics of the backscatter on F_2 are accurately measured and then correlated to the backscatter on F_1 whereby it can be reduced or minimized with relatively minor change of the desired received signal.

3,766,479

CARRIER DETECTION CIRCUIT

David Arthur Thalimer, and Myungsae Son, both of San Diego, Calif., assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 4, 1971, Ser. No. 186,362
Int. Cl. H04b 1/16
U.S. Cl. 325—320 **10 Claims**

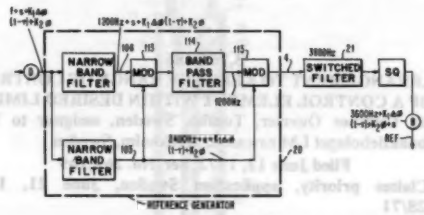


A carrier detection circuit for use with a modem receiver wherein noise level on the circuit is compared to the level of carrier to turn on a latch circuit, and turning off the latch circuit is controlled by comparing the output of an automatic gain control circuit responsive to carrier plus noise level to circuit noise level. A time delay in the automatic gain control circuit prevents turn-off due to momentary signal drop-outs.

3,766,480
DEVICE FOR RECOVERING A FREQUENCY SHOWING PHASE JITTER

Jacques Belloc, Fontonne Antibes; Michel Francois Choquet, Vence, and Jean Marc Pierret, Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 19, 1972, Ser. No. 218,963
Claims priority, application France, Jan. 21, 1971, 7102568
Int. Cl. H04l 27/22
U.S. Cl. 325—320 7 Claims

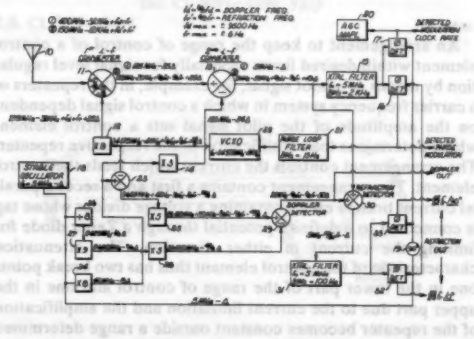


Frequency shift and phase jitter impressed on angle modulated signal spectra during long distance transmission is eliminated at the receiver where the data spectra exclusive of the harmonically related pilot frequencies is time and phase delayed by a discrete amount in a data recovery path. At the same time, a demodulation frequency is extracted from the signal spectrum in a carrier recovery path, the demodulation frequency being the sum of the pilot frequencies. Relatedly, the demodulation frequency is time and phase delayed in the carrier recovery path by an amount equal to that of the data path. Demodulation of the data spectra thus subtractively eliminates the frequency shift and jitter components.

3,766,481
RADIANT ENERGY RECEIVER

Paul D. Rodgers, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 20, 1970, Ser. No. 30,149
Int. Cl. H04b 1/00
U.S. Cl. 325—363 12 Claims

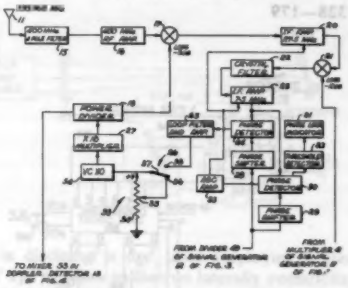


A satellite navigation system including a single-channel receiver for producing output signals from which the geographical position of a ship may be calculated. The receiver utilizes a first intermediate frequency (IF) which is approximately equal to the mean difference of the frequencies of two incoming carriers. This makes it possible to use a single channel because the first IF of one carrier is almost exactly the same as that of the other. A filter may then be used for any further signal separation. Doppler and refraction frequencies may also be easily extracted.

3,766,482
RADIANT ENERGY RECEIVERS

Houston Alfred Brown, Jr., Granada Hills; Donald H. Keilen, Chatsworth, and Saburo Ifune, Granda Hills, all of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 22, 1971, Ser. No. 126,492
Int. Cl. H04b 1/16
U.S. Cl. 325—419 7 Claims

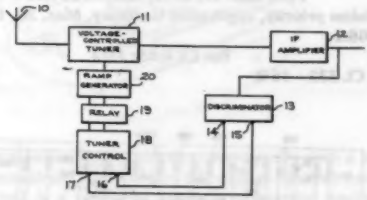


A satellite navigation receiver including two IF's and a phase locked loop. A signal generator produces synchronized signals of a constant frequency for the second mixer, phase detection and a doppler detection. The first mixer L.O. port and a doppler mixer receive a common input from a frequency multiplier and power divider. The multiplier input is supplied by the loop voltage controlled oscillator. Synchronized signals are economically obtained from one stable oscillator through the use of frequency multipliers, frequency dividers and another mixer.

3,766,483
SIGNAL SEEKING TUNER CONTROL SYSTEM

Adolf E. Wolfram, Portsmouth, Va., assignor to General Electric Company, Portsmouth, Va.

Filed June 29, 1971, Ser. No. 158,013
Int. Cl. H04b 1/32
U.S. Cl. 325—470 10 Claims

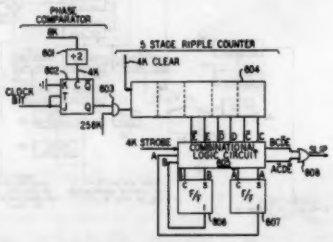


A tuner control having three discrete states for raising, lowering or maintaining frequency of a voltage controlled tuner. Oppositely phased bi-polar error voltages derived from a discriminator are applied to the input terminals of the control. When the converted frequency outputted by the tuner is at a desired value, indicating reception of a carrier signal, no error voltage is produced and the signal-seeking device is disabled. However, when the converted signal deviates from a desired frequency range, an error voltage is derived. The phase and polarity of the error voltage which is then developed causes the network to produce either a first, higher or a second, lower voltage to cause a controlled voltage applied to the tuner to rise or fall. The tuner is thus caused to home in on a desired, central frequency range. When the desired frequency range is attained, the error voltage recedes to a level which allows the tuner control to become disabled once more.

3,766,484
DETECTION OF CYCLE SLIPPAGE BETWEEN TWO SIGNALS

Robert Charles Morris, Matawan, Orlando Napolitano, Cliffwood, Gerald Philip Pasternack, Colts Neck, and Burton R. Saltzberg, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 18, 1972, Ser. No. 289,947
Int. Cl. H03k 3/53
U.S. Cl. 328—179 6 Claims

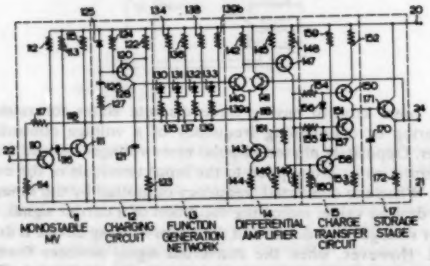


Clocking signals are recovered from an incoming signal train by a master clock oscillator phase locked to the incoming signals, and, in the event of a failure or malfunction involving the master clock, by a standby clock similarly phase locked to the incoming signals. One of the malfunctions occurs when the phase of the clock output slips a cycle with respect to the phase of the signal train. It is determined that a cycle slippage condition exists when phase comparisons of the signals indicate the clock output is passing from a phase lag error to a phase lead error, or vice versa, without passing through a region of no phase error.

3,766,485
FREQUENCY-VOLTAGE TRANSLATION CIRCUIT

Eberhard Schnaibel, Hemmingen; Helmut Fleischer; Edgar Schonart, both of Stuttgart, and Karl-Heinz Adler, Leonberg, all of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Mar. 13, 1972, Ser. No. 234,254
Claims priority, application Germany, Mar. 30, 1971, P 21 15 308.2
Int. Cl. H03c 3/12
U.S. Cl. 332—16 R 14 Claims

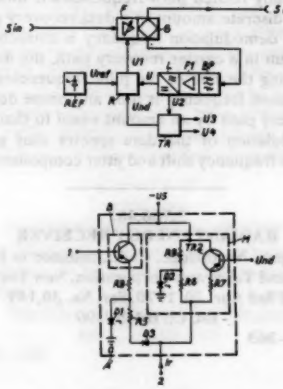


A pair of storage condensers having charging and discharge circuits, and a change-over circuit therebetween, are interconnected under control of a monostable multivibrator so that, when the monostable multivibrator is triggered into unstable state by input pulses, the trailing edge of the flanks of the pulses therefrom are connected to the charging circuit for one of the condensers to charge the condenser; and, connected to the discharge circuit to activate the discharge circuit and permit discharge of the condenser during the reset time of the monostable multivibrator and, additionally, to the change-over circuit to selectively block the change-over circuit. To provide good linearity, a function generator, preferably a diode-resistance network having an approximately parabolic or hyperbolic transfer function interconnects the storage condenser and the discharge circuit therefor. The monostable multivibrator is so connected that an output transistor thereof simultaneously forms part of the discharge circuit, to reduce the number of required components.

3,766,486
ARRANGEMENT TO KEEP THE RANGE OF CONTROL OF A CONTROL ELEMENT WITHIN DESIRED LIMITS

Fritz Gunther Ouvrier, Tumba, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed June 12, 1972, Ser. No. 262,109
Claims priority, application Sweden, June 21, 1971, 8028/71
Int. Cl. H03g 3/30
U.S. Cl. 330—52 4 Claims



An arrangement to keep the range of control of a control element within desired limits especially for signal level regulation by means of a pilot signal, for example, in the repeaters of a carrier frequency system in which a control signal dependent on the amplitude of the pilot signal sets a control element which determines the amplification of the respective repeater. The arrangement controls the current which feeds the control element. The arrangement contains a first and a second parallel current branch each containing a voltage divider whose tap is connected to a definite potential through a Zener diode for limiting the current in either direction. The attenuation characteristic of the control element thus has two break points one in the lower part of the range of control and one in the upper part due to the current limitation and the amplification of the repeater becomes constant outside a range determined by the break points.

ERRATUM

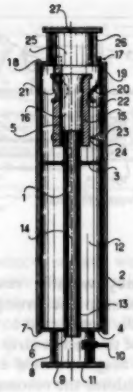
For Class 331—94 see:
Patent No. 3,766,466

3,766,487

DISCHARGE TUBE WITH DISMOUNTABLE ELECTRODE

Roland Roux, Orsay, France, assignor to Compagnie Industrielle Des Lasers, Marcoussis, France

Filed Nov. 13, 1970, Ser. No. 89,220
Claims priority, application France, Nov. 27, 1969, 6941000
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 PE 2 Claims



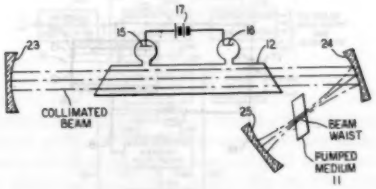
Discharge tube comprising a compartment in which at least two electrodes are arranged. One electrode is kept inside the compartment by at least two wall bushings whose ends, penetrating inside the compartment, rest flexibly on the lateral wall of the electrode.

3,766,488

DYE LASER WITH PUMP CAVITY MODE MATCHED TO LASER RESONATOR

Roger Louis Kohn, Madison, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 17, 1971, Ser. No. 153,983
Int. Cl. H01s 3/09, 3/05
U.S. Cl. 331—94.5 1 Claim



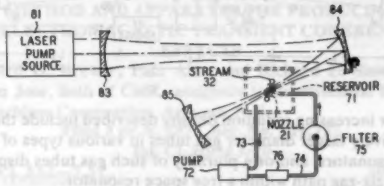
A new type of dye laser in which the dye cell is placed inside a pumping laser resonator is described. Both the dye laser radiation and the pumping laser radiation oscillate inside the same optical cavity. This design has the advantage of automatic alignment of the pumping laser and the pumped laser, as well as the reduction of the thermal problems. In the instance in which the laser frequencies do not differ greatly, automatic mode matching of the pumping laser beam and the pumped laser beam is obtained.

3,766,489

OPTICAL DEVICE, SUCH AS A DYE LASER, EMPLOYING A FREE-FLOWING LIQUID STREAM

Robert Rosenberg, and Peter Klaus Runge, both of Fair Haven, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 7, 1972, Ser. No. 224,037
Int. Cl. H01s 3/05
U.S. Cl. 331—94.5 5 Claims



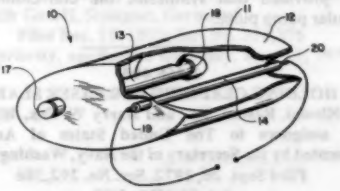
There is disclosed a dye laser employing a free-falling stream of dye solution so that no laterally constricting transparent cell is needed. The solution is pumped through a nozzle shaped to provide a smooth-surfaced central portion in a ribbon-shaped flow. The shape in the output plane of the nozzle primarily determines this flow. In a typical embodiment, the solution employs a viscous solvent such as ethylene glycol to promote a smooth-surfaced flow. The solution is filtered to eliminate bubbles and particles and is recirculated.

3,766,490

LU:ND:YAG LASER SYSTEM AND MATERIAL

John W. Strozyk, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 14, 1972, Ser. No. 234,502
Int. Cl. H01s 3/16, 3/09
U.S. Cl. 331—94.5 1 Claim



A laser system having an elliptical laser cavity with a laser rod and a broadband pump source mounted in the laser cavity. The laser rod is a co-doped Lu:Nd:YAG crystal having a Lu/Nd atomic ratio in the range from 2.0 to 2.4 distributed in the YAG host crystal. Because the laser rod absorbs a relatively small amount of radiation which does not contribute to population inversion, the laser system has no filters or absorbers.

3,766,491

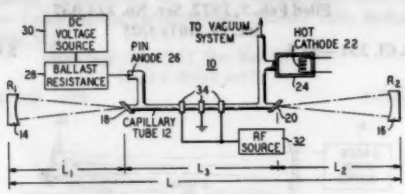
RADIATION AND PRESSURE BROADENING TECHNIQUE FOR SINGLE FREQUENCY GAS LASERS

Peter William Smith, Colts Neck, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Apr. 21, 1972, Ser. No. 246,160
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 14 Claims

Single frequency operation is achieved in a gas laser by mutually adapting the total gas pressure and the radiation density

so that twice the radiation-broadened homogeneous linewidth is greater than the inhomogeneous linewidth. Such lasers typically employ high pressures (e.g., 8–10 Torr in He-Ne) and narrow bore waveguide tubes (e.g., 0.4 mm). Other configura-



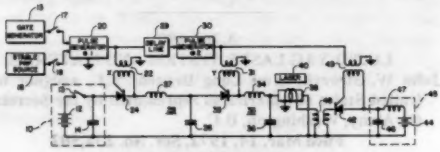
tions for increasing radiation density described include the use of relatively larger diameter gas tubes in various types of confocal resonators, and/or a plurality of such gas tubes disposed along a zig-zag path within a free space resonator.

3,766,492

LASER PUMPING SYSTEM

Vincent J. Rosati, Oakhurst, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed July 25, 1972, Ser. No. 275,026
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 **16 Claims**



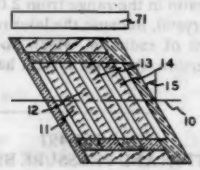
A circuit for pumping laser materials that require relatively long pump pulses wherein a series of short, closely spaced pulses are provided that synthesize the conventional single rectangular pump pulse.

3,766,493

HOLDING CLADDING FOR LASER SLABS

Van O. Nicolai, Reston, Va., and Harry W. Fox, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 26, 1972, Ser. No. 292,386
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **8 Claims**



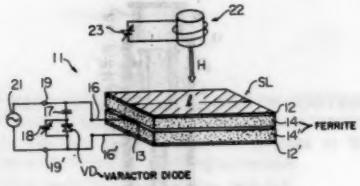
The invention disclosed in this application provides a unique cladding structure for holding laser disc elements structurally rigidly aligned and allows for release of stress produced by heating of the disc element. One unique material for this is "FEP" Teflon which is a Copolymer of Hexafluoropropylene and Tetrafluoroethylene in conjunction with ruby.

3,766,494

RESONANCE-FREQUENCY VARIABLE RESONATOR

Toshi Anbe, Yukimichi Tokuzawa, both of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Kadoma City, Osaka, Japan

Filed May 19, 1971, Ser. No. 144,886
Claims priority, application Japan, May 21, 1970, 45/44236
Int. Cl. H03b 5/18
U.S. Cl. 331—99 **8 Claims**



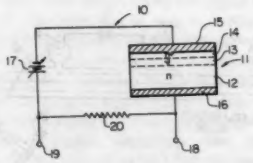
A resonance frequency variable resonator is provided, which comprises a ferrite strip line having a ferrite chip, and a varactor diode electrically connected to the ferrite strip line. Each of the reactances of the ferrite strip line and the varactor diode is controlled by a magnetic field and a bias voltage applied thereto so as to establish the resonance frequency of the resonator as desired. Since the ferrite strip line and the varactor diode complement each other, the resonator has many excellent properties, high speed responsiveness, wide variation range, reliability, and so on.

3,766,495

SEMICONDUCTOR PULSE OSCILLATING DEVICE

Sadahiko Yamashita; Toshi Anbe; Yoshihiro Hosokawa, and Tomoyasu Nakano, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed July 2, 1971, Ser. No. 159,347
Claims priority, application Japan, Jan. 22, 1971, 46/2058
Int. Cl. H03b 7/14; H03k 3/31
U.S. Cl. 331—101 **4 Claims**



A semiconductor pulse oscillating device consisting of three layers of n–ν–n^+ which are GaAs crystal, iron impurity doped in the GaAs and germanium-gold alloy formed on the iron impurity respectively, and two electrodes sandwich the layers. When a bias voltage is applied to the device in the direction of n–ν–n-layers, pulses are generated. The oscillation frequency is in the order of kHz and the pulse width is in the order of from 10^{-7} to 10^{-10} seconds. This device is used in an oscillator circuit and the bias voltage is applied, in conjunction with a coaxial delay line or a capacitor, to the n layer. The output terminal of the circuit is connected to the n^+ layer of the device.

3,766,496

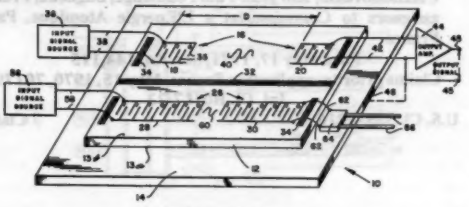
FEEDBACK-TYPE ACOUSTIC SURFACE WAVE DEVICE

Harper John Whitehouse, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 793,148, Jan. 22, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,603

Int. Cl. H03b 5/36, 7/14; H03h 9/20

U.S. Cl. 331—107 A 19 Claims



A distributed-transducer surface wave device, comprising a crystal substrate, capable of propagating a surface wave, and a pair of transducers disposed in an aligned relationship upon the crystal substrate, including an input and output transducer, each of which includes at least one pair of interdigitated electrodes disposed perpendicularly to the direction of surface wave propagation caused by the application of an input signal to the input transducer. The distance between each pair of adjacent electrodes for each of the transducers is uniform. A feedback loop is connected from the output of the output transducer to the input of the input transducer.

ERRATUM

For Class 332—16 see:
Patent No. 3,766,485

3,766,497

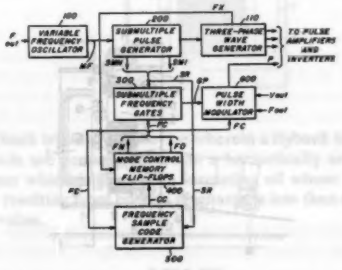
METHOD AND APPARATUS FOR PULSE WIDTH MODULATION WITH VARIABLE FREQUENCY MODES

Kenneth E. Opal, and William H. Ley, both of Oakmont, Pa., assignors to Power Control Corporation, Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,733

Int. Cl. H03k 7/08

U.S. Cl. 332—9 R 5 Claims



The number of pulses modulated during each period of the input frequency to a pulse width modulator is controlled to be a multiple of the input frequency, where the multiple is changed as predetermined frequency range boundaries are crossed. The frequency multiple is increased inversely with the frequency range so that, at lower frequency ranges a greater number of pulses are modulated during each period. Unstable frequency multiple switching is prevented at the frequency range boundary crossover by defining each boundary as two crossover limits where one limit is at a frequency slightly higher than the boundary and the other limit is at a frequency slightly lower than the boundary. Decreasing frequency (increasing period) then crosses a first limit at a frequency slightly lower (longer period) than the boundary and increasing frequency (decreasing period) crosses a second limit at a frequency slightly higher (shorter period) than the boundary.

3,766,498

METHOD AND APPARATUS FOR PRODUCING ELECTROMAGNETIC TRANSIENT COHERENT EFFECTS

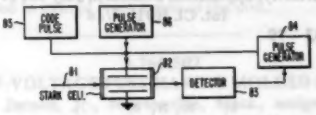
Richard G. Brewer, Palo Alto, and Richard L. Shoemaker, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1972, Ser. No. 241,721

Int. Cl. H01s 3/10

U.S. Cl. 332—7.51 20 Claims

PATENTED OCT 16 1973



Electromagnetic transient coherent effects such as photon echo and optical nutation are produced by directing cw laser radiation into a gaseous medium such as $C^{13}H_3F$ and NH_3D, contained in a Stark cell, and by applying Stark pulses which shift the molecular levels into resonance with the cw laser radiation. The effects lend themselves to applications in optical modulation, data communication, superradiance, spectroscopy, memory and pulse height to frequency conversion, among others.

3,766,499

DIRECTIONAL BROADBAND COUPLER ARRANGEMENT

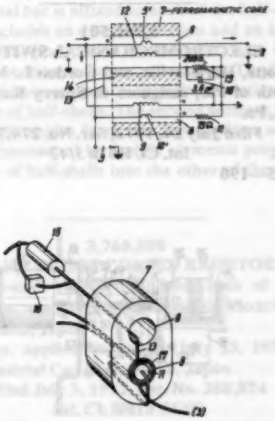
Karl Dillenberger, Berlin, Germany, assignor to Robert Bosch Elektronik GmbH, Stuttgart, Germany

Filed Dec. 11, 1972, Ser. No. 314,275

Claims priority, application Germany, Dec. 11, 1971, P 21 61 620.6

Int. Cl. H03h 7/48

U.S. Cl. 333—10 14 Claims



The coupler arrangement has an input, a main line output and a tap output. A ferromagnetic coil has a first and second

axial bore. A first winding passes through the first bore and has one end connected to the input and a second end connected to the main line output. A second winding has a first terminal connected to the input, passes through the second bore and has a second terminal connected to ground. A third winding has a first end portion connected to the tap output, passes through the second bore and has a second end portion connected to ground through a terminating resistor. A fourth winding has a first end portion connected to the tap output, passes through the first bore and has a second end portion connected to ground potential. The first and fourth windings are wound through the bore and around the outside portion of the core in a first direction, while the third and second winding are wound in the opposite direction. The first and third windings have a number of turns which is much smaller than the number of turns of the second and fourth winding.

3,766,500

RADIO NOISE FILTER

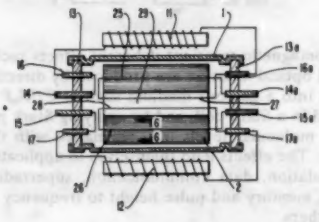
Gravs Larsen Lykke, No. 15 Ledagersti, Vanlose, Denmark

Filed July 8, 1971, Ser. No. 160,667

Claims priority, application Denmark, July 13, 1970, 3640

Int. Cl. H01h 7/14

U.S. Cl. 333—79 **7 Claims**



In a radio noise filter a capacitor, arranged in a capacitor casing having insulating end pieces carrying the input and output terminals of the filter, is to be combined with a pair of choke coils, which, due to heat dissipation, should be arranged outside the casing. As the choke coils are mechanically weak they cannot themselves carry terminals to be connected to the external wiring. Therefore, two auxiliary terminals are provided in each of the end pieces and the choke coils are connected between these auxiliary terminals which are furthermore connected to the input and output terminals of the filter in any suitable manner.

3,766,501

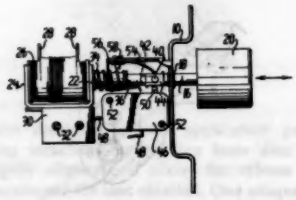
ELECTROMECHANICAL SWITCH

Gary D. Hotte, Harleysville, and Gordon L. Milligan, Norristown, both of Pa., assignors to Sperry Rand Corporation, Blue Bell, Pa.

Filed July 24, 1972, Ser. No. 274,748

Int. Cl. H01h 3/42

U.S. Cl. 335—190 **6 Claims**



A push-button shaft functions as the armature of a solenoid so that one or more on-off microswitches may be switched from one state to the other either by depressing the push-button or applying an electrical signal to the coil of the solenoid. Axial movement of the push-button shaft causes translational and rotational movement of a cam which acts against the operating plungers of the microswitches.

3,766,502

COOLING DEVICE FOR SUPERCONDUCTING COILS

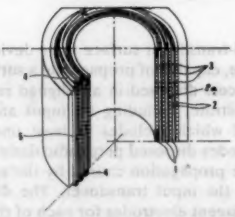
Gaston Bronca, Fontenay-aux-Roses; Christian Lefrancois, Orsay, both of France; Ivan Hlasnik, Bratislavia, Czechoslovakia, and Jean-Paul Pouillange, Bagneux, France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed May 17, 1971, Ser. No. 144,115

Claims priority, application France, May 15, 1970, 7017906

Int. Cl. H01f 7/22

U.S. Cl. 335—216 **7 Claims**



A cooling device for a superconducting element which is wound in continuous turns to form a coil. The device comprises an assembly of thin metallic filaments which is mounted between the different turns of the coil. The filaments are electrically insulated from each other and in thermal contact with the turns of the winding and with a bath of liquefied gas.

3,766,503

ELECTROMAGNETIC SWITCHING APPARATUS

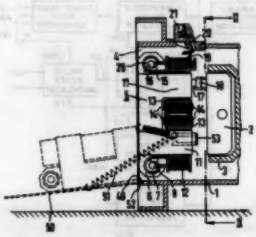
Fritz Pollmann; Siegfried Seidel, both of Amberg, and Gunther Weissberger, Riedenburg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 14, 1972, Ser. No. 280,430

Claims priority, application Germany, Aug. 14, 1971, P 21 40 807.1

Int. Cl. H01f 7/08

U.S. Cl. 335—281 **29 Claims**



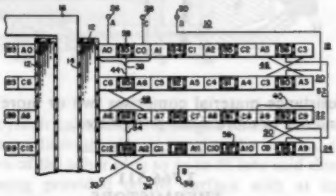
An electromagnetic switching apparatus is disclosed which incorporates a housing and an excitation unit that includes a magnet part and an excitation coil. The unit is held in the housing so that it can be swung-out; this permits replacement of the coil without taking the entire apparatus apart. The housing is preferably provided with an opening that is covered with a spring-loaded lid.

3,766,504

INTERLEAVED TRANSFORMER WINDING HAVING THREE PARALLEL CONNECTED CONDUCTORS

Dean A. Yannucci, Warren, Ohio, and Robert I. Van Nice, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 10, 1972, Ser. No. 305,387
Int. Cl. H01f 27/28
U.S. Cl. 336—70 9 Claims



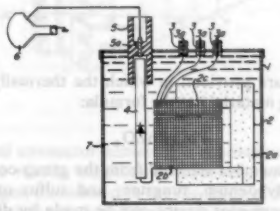
A disc-type interleaved winding for transformers. Current is conducted through the winding by three conductors connected in parallel and interconnected between the coil discs to provide three different conduction paths. The first and third conduction paths are transposed between adjacent coil discs and progress in radially opposite directions through adjacent coil discs. The second conduction path forms a looping pattern throughout the winding with the conductor forming the second conduction path physically positioned between the other two conductors in each coil disc.

3,766,505

FLYBACK TRANSFORMER DEVICE

Kuhei Sato, Ikeda, and Shunsaku Shimazu, Shijonawate, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 24, 1971, Ser. No. 174,417
Claims priority, application Japan, Aug. 27, 1970, 45/75336; Aug. 27, 1970, 45/75338; Sept. 11, 1970, 45/90967
Int. Cl. H01f 27/02
U.S. Cl. 336—94 3 Claims



A flyback transformer device wherein a flyback transformer and diode are accommodated in a hermetically sealed metal container which is filled with insulating oil whose amount of charge resulting from corona discharge is less than a predetermined value.

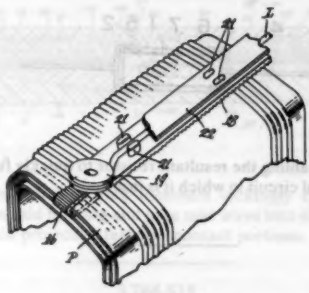
3,766,506

ELECTRICAL TRANSFORMER COILS

Theodore E. Gaty, III, 1132 Lane Allen Road, Lexington, Ky.

Filed June 5, 1972, Ser. No. 259,961
Int. Cl. H01f 15/10
U.S. Cl. 336—192 7 Claims

The invention relates to novel devices for, and methods of, anchoring start, tap or finish leads in a transformer coil, whereby such leads are relieved of stresses during handling and assembly of the transformer coil. The invention comprises a device having a portion adapted to be mechanically



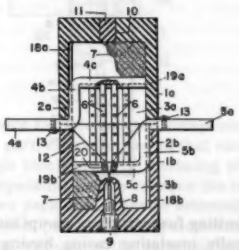
anchored to the coil by winding turns of wire thereover, and a connected portion having a lead receiving and protecting portion adapted to extend from a side of the coil.

3,766,507

LOW-VOLTAGE FUSE HAVING MOLDED CASE

Philip C. Jacobs, Jr., Newtonville, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Nov. 3, 1971, Ser. No. 195,403
Int. Cl. H01h 85/12
U.S. Cl. 337—161 6 Claims



An electric fuse has a substantially prismatic housing or casing formed by a pair of complementary hood-shaped half-shells. A terminal bar is affixed to each of the half-shells. Each terminal bar includes an external portion and an internal portion. The internal portions of the terminal bars include two sections, a first section and a second section. The first sections of the terminal bars extend in opposite directions each into one of said pair of half-shells. The second sections project substantially at right angles from the first sections and are conductively interconnected by fusible elements projecting from one of the pair of half-shells into the other of the pair of half-shells.

3,766,508

FLAME-PROOF COATED RESISTORS

Toshio Wada, and Yasuhiro Shindo, both of Katano-shi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Claims priority, application Japan, July 13, 1971, 46/52353
Electric Industrial Co., Ltd., Osaka, Japan
Filed July 3, 1972, Ser. No. 268,874
Int. Cl. H01h 85/00
U.S. Cl. 337—163 10 Claims

An electrical resistor of flame-proof type comprising a resistance material coated substrate formed with or without a

plurality of grooves determinant of the value of the resultant resistor, wherein glass is applied thereon in various configura-

tions for enabling the resultant resistor to quickly fuse to open an electrical circuit in which it is inserted.

3,766,509

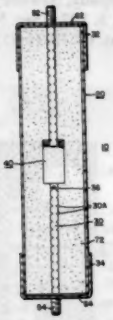
HIGH VOLTAGE CURRENT LIMITING FUSE

Frank L. Cameron, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 30, 1971, Ser. No. 185,199

Int. Cl. H01h *85/44*

U.S. Cl. 337—279 **10 Claims**



A current limiting fuse structure comprising a generally tubular, electrically insulating casing having terminal means disposed adjacent to the opposite ends thereof. One or more fusible elements or links is connected between the terminal means of said fuse structure. An axially extending electrically insulating member is disposed on one or more of the fusible elements between at least the central portion thereof and one of the associated terminal means. The electrically insulating member is formed from a material which evolves one or more gases which assist in arc extinction in the presence of an arc which results when the associated fusible element melts or blows. The last mentioned material is also substantially nontracking from the electrical standpoint in the presence of an arc.

3,766,510

VOLTAGE SENSOR AND METHOD OF USING SAME

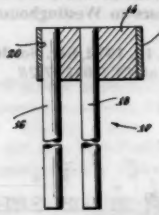
Frederic R. Quinn, Red Hook, N.Y., assignor to Zyrotron Industries, Inc., South Hackensack, N.J.

Continuation-in-part of Ser. No. 882,549, Dec. 5, 1969, Pat. No. 3,630,971. This application Dec. 23, 1971, Ser. No. 211,576

Int. Cl. H01c *7/10*

U.S. Cl. 338—20 **12 Claims**

Metal sulfide compounds and metal phosphate compounds are combined in a selected manner to form a resistance material for a stable sensor having a variable resistance characteristic in response to changes in voltage. One example



of the resistance material comprises two or more metal sulphides and one or more metal phosphates.

3,766,511

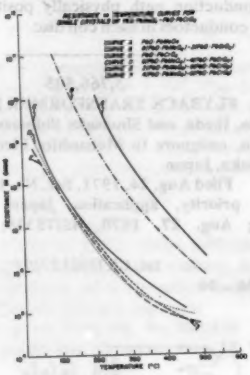
THERMISTORS

Robert C. De Vries, Burnt Hills, and James F. Fleischer, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 155,949, June 23, 1971. This application Dec. 26, 1972, Ser. No. 318,364

Int. Cl. H01c *7/04*

U.S. Cl. 338—22 **8 Claims**



Thermistors are provided in which the thermally sensitive semiconducting material has the formula:

$$PbO{\cdot}PbZO_x$$

wherein Z is a member selected from the group consisting of chromium, molybdenum, tungsten, and sulfur or mixtures thereof. The thermistor device can be made by dipping two closely spaced electrical conductors into a melt of the thermally sensitive semiconducting material to form an element of the material between the conductors.

3,766,512

ELECTRIC SAFETY PLUGS AND SOCKETS

Jean Oswald Falbet, 18 rue Descartes, Agen, Lot-et-Garonne, France

Filed June 21, 1971, Ser. No. 154,805

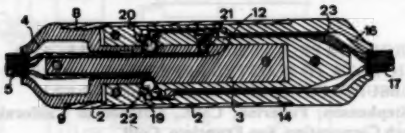
Claims priority, application France, June 22, 1970, 7022996

Int. Cl. H01r *3/06, 17/18*

U.S. Cl. 339—14 R **2 Claims**

An electrical connection device comprising at least two male and female plugs each constituted by a body of insulating material, the body of the male plug comprising a sleeve with a

hollow core on the internal face of which are arranged at least two contacts mounted in slots on elastic means causing them to project from the internal face, while the body of the female plug comprises, at the front, an external tubular casing having an internal diameter equal, to within the necessary clearance, to the external diameter of the sleeve of the other plug, so as to permit the introduction of said sleeve into said tubular casing, and a cylindrical mandrel arranged axially inside the casing an having a diameter almost equal to the internal diameter of the sleeve of the other plug so as to fit into said sleeve, said mandrel being provided on its surface with at least two recesses intended to receive the projecting contacts of the other plug, and each containing a contact connected to one of the conductors terminating in said female plug.

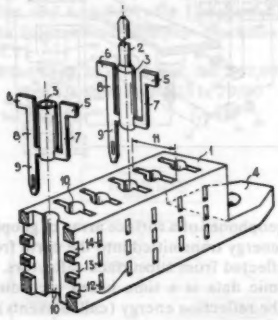


3,766,513

SUCCESSIVE CONNECTION ELECTRICAL CONNECTOR

Jacques Carre, Suresnes, France, assignor to Socapex, Paris, France

Filed May 3, 1972, Ser. No. 249,794
Claims priority, application France, May 28, 1971, 7119582
Int. Cl. H01r *29/00, 13/42*
U.S. Cl. 339—31 R **1 Claim**



Electrical connector achieving a connection in a predetermined and readily modifiable sequence, by positioning in several stages, considered in the direction of their length, the conductor elements which are to be connected together, a plurality stages of locations being formed in the insulating socket of the connector, into which can penetrate catches carried by the said elements.

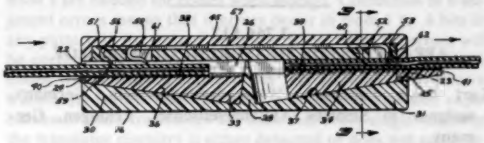
3,766,514

ELECTRIC WIRE CONNECTING DEVICE

Herbert J. Kimm, 9238 Russell Ave., South, Minneapolis, Minn.

Filed Nov. 26, 1971, Ser. No. 202,393
Int. Cl. H01r *9/08*
U.S. Cl. 339—99 R **3 Claims**

An electric wire connecting device formed as an elongated insulating housing comprising a chamber having a conducting bar therein longitudinally thereof carrying conductors having terminal contact portions projecting therethrough and in opposed spaced relation thereto to accommodate an electric wire therebetween is a pair of locking members arranged to have holding engagement with electric wires inserted into said housing whereby upon partial withdrawal of said wires from said housing, said locking members lockingly engage said wires within said housing and urge said wires into electric contact with said projecting terminal contact portions.

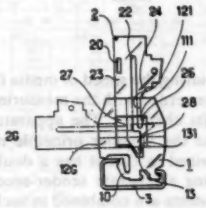


3,766,515

ASSEMBLY DEVICE FOR A CONNECTOR

Jean Debaigt, Maisons-Laffitte, France, assignor to C.G.E.E. Alsthom, Levallois-Perret, France

Filed Jan. 20, 1972, Ser. No. 219,433
Claims priority, application France, Jan. 22, 1971, 7102206
Int. Cl. H01r *9/00*
U.S. Cl. 339—198 GA **6 Claims**



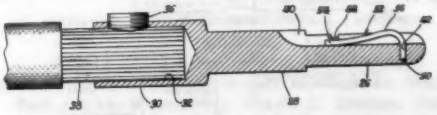
Assembling device for a connector, comprising a fixed part and a detachable part, characterized in that each of the parts constitutes a single block made of insulating plastic material provided with cooperating means between the two parts, such that one of the two parts comprises an orientation correcting guide finger, the other part comprising an orientation correcting guide aperture, and one of the parts comprises a resilient finger supporting a locking catch, the other including a lock ridge.

3,766,516

ELECTRICAL TERMINAL WITH IMPROVED RESILIENT BIASING MEANS

Arthur I. Appleton, c/o Appleton Electric Company, 1701 W. Wellington, Chicago, Ill.

Filed Apr. 3, 1972, Ser. No. 240,374
Int. Cl. H01r *13/06*
U.S. Cl. 339—252 P **2 Claims**



An improved electrical terminal of the type wherein the male portion of the terminal comprises a cylindrical prong and the female portion of the terminal comprises a mating cylindrical hole, the improvement going specifically to the manner in which the female portion and male portion are resiliently biased internally into snug mating contact with one another to

ensure the reliable and uninterrupted transmission of electrical current therebetween. Specifically, the resilient biasing means preferably comprises a short bent wire captively contained within a longitudinal slot in the male prong.

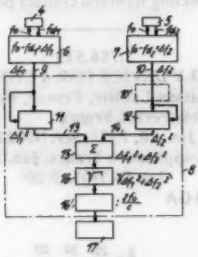
3,766,517
APPARATUS FOR MEASURING THE SPEED OF FLOWING MEDIA

Kurt Erich Fahrbach, Wiesbaden-Schierstein, Germany, assignor to Siemens Aktiengesellschaft, Erlongen, Germany

Continuation of Ser. No. 849,812, Aug. 13, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,832

Int. Cl. G01s *9/66*; G01p *5/00*

U.S. Cl. 340—3 D **2 Claims**



Apparatus for measuring the speed of media flowing in conduits is specifically concerned with the measuring of the speed of blood flowing in its channels. The apparatus is using ultrasound according to the Doppler principle method and is particularly characterized in that it has a double measuring system each containing a separate sender-receiver and that the two measuring systems are combined in such manner that the senders-receivers contained therein have sending-receiving directions which form an angle of 90°.

3,766,518
APPARATUS FOR DETERMINING DISTANCE

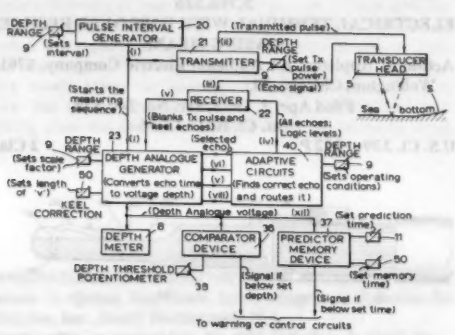
John W. Rilett, Saffron Walden, England, assignor to Maurice Powell Limited, Walden, England

Filed Dec. 15, 1969, Ser. No. 884,893

Claims priority, application Great Britain, Dec. 18, 1968, 60,196/68

Int. Cl. G01s *9/68*

U.S. Cl. 340—3 R **14 Claims**



An electronic apparatus for depth sounding and range finding and primarily intended for use with ships. The apparatus produces an analogue voltage indicative of distance and proportional to the time duration between the transmission of pulses of acoustic energy and the reception of corresponding reflection pulses and includes circuitry for producing warning signals if the analogue voltage reaches a pre-set value indicative of a certain distance or if the rate of change of the analogue voltage is predictable as producing a future value indicative of a certain distance within a pre-set time interval. Further circuitry is provided to improve the validity of the operational results of the apparatus.

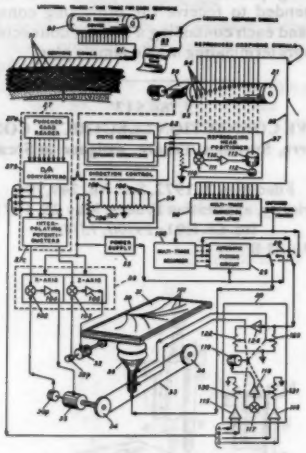
3,766,519
METHOD FOR PROCESSING SURFACE DETECTED SEISMIC DATA TO PLOTTED REPRESENTATIONS OF SUBSURFACE DIRECTIONAL SEISMIC DATA

Lee P. Stephenson, Fullerton, Calif., assignor to California Research Corporation, San Francisco, Calif.

Continuation of Ser. No. 416,947, Sept. 24, 1964, abandoned. This application June 8, 1970, Ser. No. 44,648

Int. Cl. G01v *1/24*, *1/28*

U.S. Cl. 340—15.5 DS **9 Claims**



Individual geophones of a surface array of geophones detect the arrival of energy transmitted into the earth from a seismic source and reflected from subsurface reflectors. A record of traces of seismic data is a time based recording of signals representing the reflection energy (called events) detected by each individual geophone.

When the geophones are treated as an array, the energy detected by the array may be analyzed to provide both amplitude and direction identification for the reflected energy. By systematically processing the record of traces representing the energy reflected to the geophone array it is possible to isolate directional energy, to pick reflection events within the isolated energy and to plot these selected events along a directionally distinct representation of the subsurface path of seismic energy from the surface source to the subsurface reflector and back to the surface geophone array.

3,766,520
CHARACTER READER WITH HANDPRINT CAPABILITY

Joseph V. Patterson, Charlotte, N.C., assignor to Regonition Equipment Incorporated, Irving, Tex.

Continuation of Ser. No. 867,592, Oct. 20, 1969. This application Nov. 10, 1971, Ser. No. 197,458

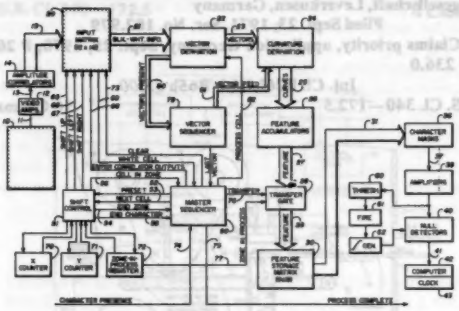
Int. Cl. G06k *9/12*

U.S. Cl. 340—146.3 AE **17 Claims**

Binary signals representing the black (character presence) or white (character absence) state of each of a plurality of cells in a grid encompassing a character to be identified are

compared with the signals from cells surrounding each given cell to produce vector signals identifying the vector relationship of character edges at and adjacent to each cell.

A set of accumulators, one for each member of a set of predetermined character features, is connected to be responsive to the vector signals sequentially for each of a plurality of subsets of said cells. Signals from the accumulators are stored in a storage matrix for each subset. The character features thus stored in the storage matrix for all of the subsets are then applied to character masks for character identification.

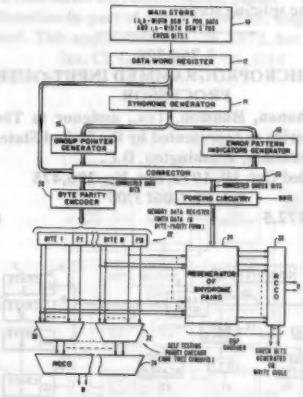


3,766,521

MULTIPLE B-ADJACENT GROUP ERROR CORRECTION AND DETECTION CODES AND SELF-CHECKING TRANSLATORS THEREFOR

William C. Carter, Ridgefield, Conn.; Edward P. Hsieh, Yorktown Heights, and Aspi B. Wadia, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 26, 1972, Ser. No. 247,071
Int. Cl. H04l *1/10*; G11c *29/00*
U.S. Cl. 340—146.1 AL 28 Claims



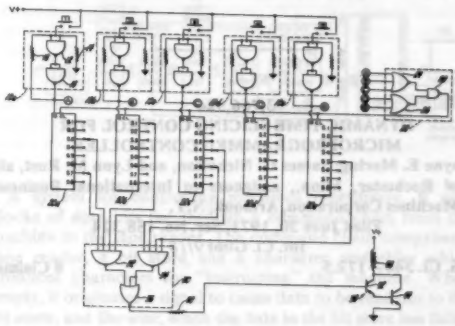
Novel error correction and detection codes and self-checking translators therefor are disclosed. A first of these codes is a t b-adjacent bit group error correcting d-adjacent bit group error detecting code using a quantity of $2t+d$ groups of b check bits. This code with a b-bit BSM (basic storage module) memory organization is capable of correcting b-adjacent errors due to failures in any t basic storage modules, detecting b-adjacent errors due to failures in any $t+d$ basic storage modules, and, because of the translator design, detecting with high probability b-adjacent errors in $2t+2d-1$ storage modules where $1 \leq t$, $0 \leq d$. If k b-bit BSM's are needed for data, then t and d may be chosen as any integers such that $k+2t+d \leq 2^b+l$, and $242t+d\ 2^b-1$. In this case $k+2+d$ b-bit BSM's are needed for coded word storage. Correction of b-adjacent errors means that if errors occur in from 1 to b bits in any pattern in the output of a b-bit BSM, these bit errors will be corrected. Self-checking translators are provided for these codes which employ substantially less circuitry than known translators for the same purpose. The failure-tolerance capabilities of these translators are such that every single failure in the translator circuitry is either detected or does not cause erroneous output and the probable accumulation of undetected failures in the translator circuitry before ultimate detection does not produce any erroneous output that goes undetected.

3,766,522

ELECTRONIC COMBINATION LOCK

Lawrence C. Marsh, Dearborn Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 10, 1972, Ser. No. 279,642
Int. Cl. E05b *47/02*; H04q *3/02*
U.S. Cl. 340—147 MD 3 Claims



An electronic combination lock includes an entry bank comprising a plurality of multistage registers interconnected with a plurality of pushbutton switches so that a combination number entered by actuation of the switches is progressively shifted through the various registers. Certain stages of the registers are interconnected through logic gate means so that if the combination is properly entered a controlled device such as a door unlocking solenoid is energized. In another embodiment a memory bank comprising second plurality of multistage registers are interconnected with the pushbutton switches and permit through actuation of memory/entry switch means the programming of the memory bank for a particular combination. The output of the respective ones of the shift registers in the memory bank are compared with respective ones of the shift registers in the entry bank and if, after the entry of the combination code number, registers of the entry and memory bank are identical, the controlled device is energized.

3,766,523

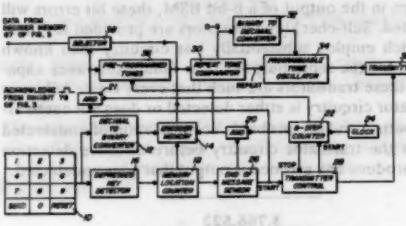
SEQUENTIAL TONE SIGNALLING SYSTEM

John R. Brocker, Batavia; Ronald H. Chapman, Wheaton; Paul Jacobs, Schaumburg; Ronald C. Johnson, Chicago; Jerry R. Powell, Carol Stream, all of Ill., and Robert L. Peay, Coral Spring, Fla., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 4, 1972, Ser. No. 295,074
Int. Cl. H04b *1/00*; H04q *1/45*
U.S. Cl. 340—171 PF 25 Claims

A selective calling sequential tone signalling system for transmitting and receiving predetermined coded messages. A

base station and at least one mobile station is provided, and message, status, automatic status and identification codes comprising predetermined format sequences having seven



tones each are transmitted therebetween. Automatic message acknowledgment is provided for message receipt verification, and apparatus is provided for substantially eliminating false reception of signals having an improper format.

3,766,524

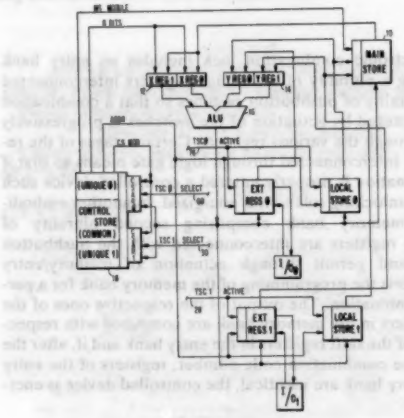
DYNAMIC TIME SLICING CONTROL FOR MICROPROGRAMMED CONTROLLER

Blayne E. Maring; James G. Nicholson, and Lynn M. Rust, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,324

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **8 Claims**



A plurality of independent addressing devices are dynamically assigned instruction cycles. The addressing devices each address a common addressable data storage unit. Logic circuitry is provided to generate status signals indicating which addressing device is active during a present instruction cycle. Other logic circuitry is responsive to interrupt requests to generate signals indicating the status of competing interrupts. Instruction cycle assignment circuitry is responsive to the active address device status signals and the interrupt status signals to generate signals for selecting the addressing device which is to be assigned the next instruction cycle.

3,766,525

APPARATUS FOR MANIPULATING RECEPTACLES OF EXPOSED CUSTOMER FILMS

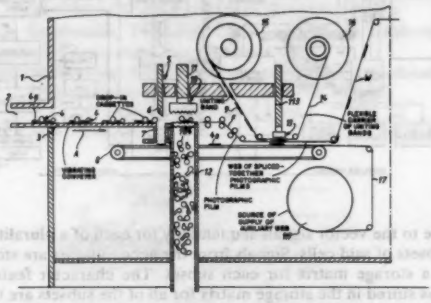
Norbert Schlagheck; Herbert Schultes, both of Furstenfeldbruck; Horst Schneider, Horrem, and Hans-Peter Huber, Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 23, 1971, Ser. No. 182,979

Claims priority, application Germany, Sept. 25, 1970, P 20 47 236.0

Int. Cl. B26f *3/00*; B65h *35/00*

U.S. Cl. 340—172.5 **16 Claims**



Drop-in cassettes or analogous receptacles for exposed photographic customer films are processed one after the other in a light-tight enclosure wherein successive receptacles are opened to permit removal of reels with convoluted films thereon so that the films can be withdrawn from the reels and spliced to each other end-to-end to form a continuous web which can be readily conveyed through a developing, printing or copying machine. Each receptacle carries information pertaining to the identity and/or other data concerning the respective customer, and such information is separated from the receptacles prior or during to opening and is attached to the respective films of the web. Alternatively, the information is read at the opening station, stored in a suitable storing device, and exposed onto or punched into the respective films of the web at the splicing station.

3,766,526

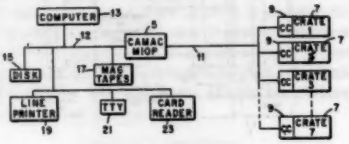
MULTI-MICROPROGRAMMED INPUT-OUTPUT PROCESSOR

James A. Buchanan, Houston, Tex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 10, 1972, Ser. No. 296,475

Int. Cl. G06f *3/00*

U.S. Cl. 340—172.5 **6 Claims**

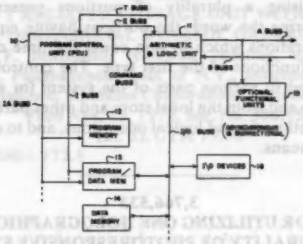


A programmable input-output processor has been provided for use with multiple channel data acquisition systems such as the CAMAC dataway, a standardized digital system that is capable of handling vast amounts of digital data. The processor acts as a branch driver which provides multiple channel direct memory access to a host computer via a single memory access interface. Command lists in computer memory select microprogrammed sequences, stored in a fast-access control memory, which transfer data between CAMAC devices and lists in computer memory.

3,766,527
PROGRAM CONTROL APPARATUS

Joseph C. Briley, Milford, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 1, 1971, Ser. No. 185,649
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 4 Claims

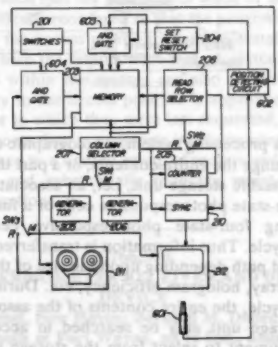


Program control apparatus in which current instruction execution and next instruction fetch occur in overlapped time periods during one instruction cycle. The results of a previous instruction execution are employed to set or not set selected ones of a plurality of condition latches in accordance with a current instruction. The current instruction also includes a test code which when combined in a decoding network with the outputs of the latches will produce a selection signal to a next instruction address multiplexer. The multiplexer will respond thereto to selectively couple one of plural instruction address sources to an instruction address buss. The program control apparatus also includes means responsive to a current instruction test code and the outputs of the condition latches to enable or to inhibit the storage of the results of an instruction execution.

3,766,528
PATTERN GENERATING DEVICE

Takeshige Ichida, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 64,745, Aug. 18, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,713
Int. Cl. G06f 3/02, 3/06, 3/14
U.S. Cl. 340—172.5 5 Claims

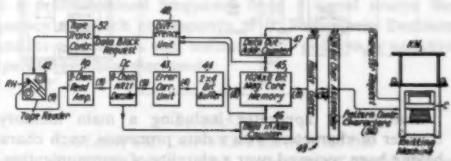


A pattern generating device has a function of storing pattern information in a memory consisting of a matrix of a number of storage elements by means of a set of switches disposed in correspondence to the storage elements respectively, then reading the pattern information formed on the matrix of the storage elements by scanning the columns and rows thereof, forming a visual pattern on a CRT display device synchronized with the scanning operation for monitoring the pattern information made on the memory, correcting the errors in the pattern information formed on the memory by operating switches corresponding to the storage elements making the errors, and then recording the pattern information by means of a recording device. In accordance with this pattern generating device, a pattern information consisting of a great number of spots can be made in a short time and an animation in a mosaic pattern can be carried out with high efficiency.

3,766,529
COMPUTER-COMPATIBLE TAPE AND READING SYSTEM THEREFOR

Paul McLaughlin, Hythe, Southampton, England, assignor to Racal-Thermionic Limited, Hythe, Southampton, Hampshire, England

Continuation-in-part of Ser. No. 17,060, March 6, 1970, abandoned. This application Mar. 17, 1972, Ser. No. 235,720
Int. Cl. G06f 7/00, 7/28, 15/46
U.S. Cl. 340—172.5 16 Claims

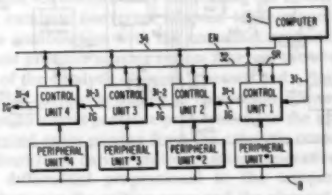


A system for controlling machines repetitively. It uses blocks of data bits fed through a command chain from the machine to the tape reader. The command chain comprises a tape reader, a bit store and a character assembler which produces characters for "instructing" the machine. When empty, it originates a signal to cause data to be read out to the bit store; and likewise, when the data in the bit store has fallen to a pre-set level, a signal is originated to the tape reader to read out a further block of data. The data blocks are arranged to be read out by transporting the tape first in one direction and then in the reverse direction, with each two blocks to be read consecutively in either direction having interposed therebetween a block which is to be read in the opposite direction.

3,766,530
COMMUNICATIONS BETWEEN CENTRAL UNIT AND PERIPHERAL UNITS

Roy Atsushi Ito, Los Angeles, Calif., assignor to RCA Corporation, New York, N.Y.

Filed July 21, 1972, Ser. No. 273,749
Int. Cl. G06f 9/18, 3/04
U.S. Cl. 340—172.5 6 Claims

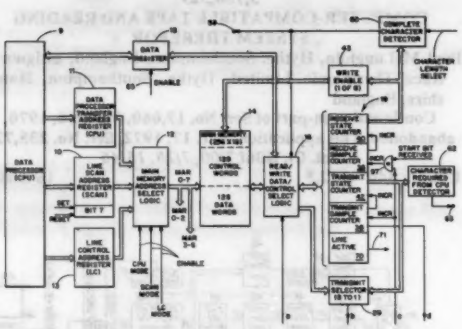


A central processing unit interrogates peripheral devices under its control to determine the ones requiring servicing. Those which do, are placed in a queue and then serviced in sequence. After the servicing is completed of all the units in the queue, the process is repeated.

3,766,531
COMMUNICATION LINE MULTIPLEXING APPARATUS HAVING A MAIN MEMORY AND AN INPUT/OUTPUT MEMORY

Stuart B. Cooper, Framingham, and John P. Grandmaison, Sudbury, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Mar. 13, 1972, Ser. No. 234,156
Int. Cl. G06f 3/04
U.S. Cl. 340—172.5 **28 Claims**

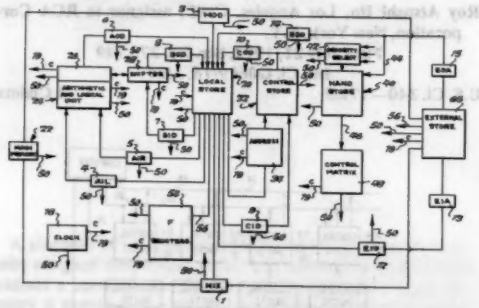


Multiplexing apparatus including a main memory for transfer of characters with a data processor, such characters having been recieved over a plurality of communication lines and/or to be transmitted over the lines; and further including an input/output memory for transmitting and/or receiving the character a bit at a time with the communication lines; and further including coupling between both memories for transfer of transmit and/or receive bits therebetween. Means are provided to update a control word stored in the main memory in order to keep track of the status for each of the communication lines.

3,766,532
DATA PROCESSING SYSTEM HAVING TWO LEVELS OF PROGRAM CONTROL

John T. Liebel, Jr., Williamsville, N.Y., assignor to Nanodata Corporation, Williamsville, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,689
Int. Cl. G06f 13/00, 9/10
U.S. Cl. 340—172.5 **16 Claims**

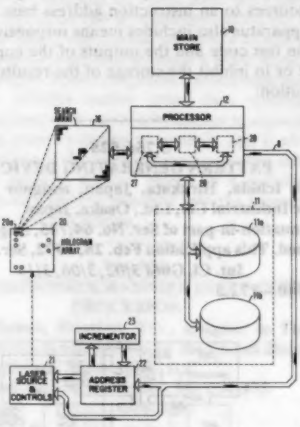


A data processing system comprising a local storage means for storing information to be processed and operation means connected to the local storage means for performing operations, such as arithmetic and logical, on information supplied thereto. A first storage means contains a plurality of microinstructions each having an operation code which are selected by addressing means connected to the local store. A second storage means contains a plurality of words which are selected by an addressing means connected to the first storage means which supplies a current address of the highest priority from a plurality of address sources, one of which includes the operation code of the selected microinstruction. A control means receives selected words gated from the second storage means and for each word provides control functions of a first type having a particular execution time duration and of a second type comprising a plurality of portions presented in a sequence during the word, the portions having equal execution time durations which in sum equal the time duration of the control functions of the first type. The control functions are connected to various parts of the system for example to gate buses to and from the local store and other parts, to select particular arithmetic and logical operations, and to control the addressing means.

3,766,533
PROCESSOR UTILIZING ONE HOLOGRAPHIC ARRAY AND A PLURALITY OF PHOTORESPONSIVE STORAGE ARRAYS FOR HIGH PAGING PERFORMANCE

John C. Black, Endwell; Neil N. Krewson; John B. Tait, both of Vestal, and Bruce M. Updike, Endwell, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1972, Ser. No. 257,591
Int. Cl. G11c 13/04, 15/00
U.S. Cl. 340—172.5 **11 Claims**



In a data processing system, a holographic array is controllable to change the entire contents, or a part thereof, of a content addressable storage unit, i.e., an associative storage unit having two-state photoresponsive cells or a functional storage unit having four-state photoresponsive cells during one machine cycle. Thus information is transferred in parallel in a broad band path depending upon the size of the photoresponsive cell array, hologram efficiency, etc. During a succeeding machine cycle, the entire contents of the associative or functional storage unit may be searched in accordance with a search argument to select from the storage unit data which corresponds to the search argument. In this fashion, significant quantities of data are searched rapidly. Within the same system, the holographic array can be controlled during one machine cycle to change the entire contents of additional storage arrays which may be of the associative, functional or location addressable type. In this fashion, storage units such as microprogram control stores, operating system program stores and user application program stores can be rapidly changed,

for example, a page (e.g., 2000 bytes) at a time during one machine cycle. This adds a new dimension for information transfer within high performance data processing systems. In one embodiment, read/write hologram arrays, the contents of which are selectively changeable, are utilized to provide a greater versatility and performance to system operation.

3,766,534

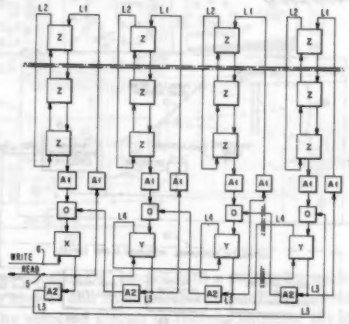
SHIFT REGISTER STORAGE UNIT WITH MULTI-DIMENSIONAL DYNAMIC ORDERING

William F. Beausoleil, Hopewell Junction, and Byron E. Phelps, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1972, Ser. No. 306,952

Int. Cl. G11c *19/00*

U.S. Cl. 340—172.5 **25 Claims**



A data storage unit in which words of data including the word addresses are stored in groups of shiftable matrices, the groups of matrices being operable on a signal requesting access to repetitively shift their contents to other matrix positions in various loops, some of which include a position from which a word may be accessed and some of which exclude the access position. The bits in a data word are distributed among groups of matrices, each group generally containing only one bit of a given word. Each group is logically divided into a plurality of sectors, with each sector containing bits from several words. Controls are provided for varying the shifting in the various loops such that the positions of some or all of the sectors are dynamically reordered so that the proximity of each of the sectors to the access position is approximately or exactly the order in which the sectors were last requested, and so that the word bits within the sectors are also positioned so that their proximity to the access position is approximately or exactly the order in which they were last requested, thus reducing average access time in programs involving considerable repeated reference to a limited group of sectors and/or words in the memory, and substantially reducing worst-case access time for all situations.

3,766,535

TELETHERMOMETER RECEIVER AND DISPLAY DEVICE

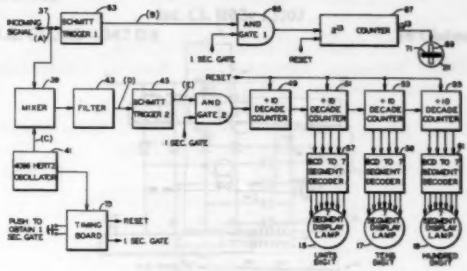
George F. Deebel, New Haven; Bernard M. Doden, and Myron J. Morris, both of Fort Wayne, all of Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Apr. 14, 1972, Ser. No. 244,081

Int. Cl. G08c *19/16*

U.S. Cl. 340—181 **20 Claims**

A device for receiving a signal having a frequency which is a linear function of a temperature being monitored at a remote location and for providing a display of that temperature value is disclosed. The display digits are energized in accordance with the values stored in respective ones of a plurality of concatenated decade counters which in turn periodically receive their count by gating into them, for a prescribed length of time, a reshaped demodulated signal which is in turn derived from the received signal. This demodulated signal is mixed



with a predetermined frequency from a signal source the frequency of which corresponds to 0° Fahrenheit. Decision means for providing a sign indication for positive or negative temperatures is also disclosed.

3,766,536

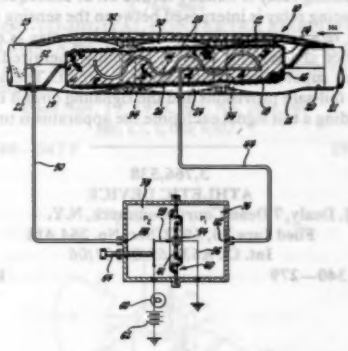
CATALYTIC CONVERTER MONITOR

John W. Hile, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 15, 1971, Ser. No. 208,166

Int. Cl. G08b *17/04*; **B01j** *9/00*

U.S. Cl. 340—229 **1 Claim**



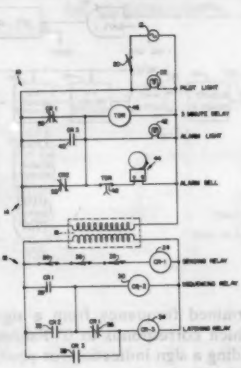
Apparatus for continuously monitoring the activity of an automobile catalytic converter adapted to be mounted on the vehicle in combination with the converter comprising an enclosed fluid pressure sensing system wherein the average temperature of the catalytic element is sensed and a fluid pressure proportional thereto is placed in opposition across a flexible diaphragm to a fluid pressure proportional to the temperature of the treated gases passing from the catalytic converter. The flexible diaphragm carries indicator means operative when the pressure differential proportional to the temperature differential between the exiting gases and the element is below a predetermined pressure differential to indicate that the converter is operating below a predetermined level of activity. The predetermined pressure differential may be either zero or a negative value to indicate that the converter is inactive or a larger value to indicate that the converter is active but operating at a level of activity below minimum.

3,766,537

A.C. POWERED SURVEILLANCE SYSTEM

John MacFarlane, Avon, Conn., assignor to The Theodore D. Bross Line Construction Corporation, Bloomfield, Conn.

Filed May 3, 1971, Ser. No. 139,714
Int. Cl. G08b *13/08*
U.S. Cl. 340—276 **15 Claims**



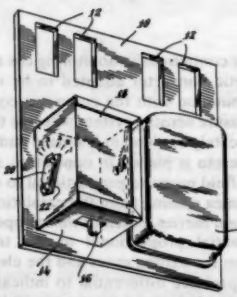
A signaling apparatus having particular utility as a burglar alarm system is composed of a signaling circuit having an alarm signal source and a sensing circuit which trips the alarm source in the signaling circuit upon the appearance of a burglar or other condition to which the sensing circuit is sensitive. The sensing circuit includes a plurality of normally closed, serially connected switches which hold a sensing relay energized in the absense of the condition. With the appearance of the condition, the sensing relay is deenergized and a latching relay is tripped which energizes the alarm signal source. To prevent the latching relay from being tripped whenever power to the sensing relay is initially turned on or subsequently dips, a sequencing relay is interposed between the sensing relay and latching relay and insures that the sensing relay is energized first. Since the sensing relay is normally energized, there is continual supervision of the sensing circuit. The apparatus also has fail-safe provisions and the signaling circuit is capable of providing a test signal each time the apparatus is turned on.

3,766,538

ATHLETIC DEVICE

Robert J. Dealy, 7 Dean Court, Commack, N.Y.

Filed June 20, 1972, Ser. No. 264,411
Int. Cl. A63b *69/00, 71/06*
U.S. Cl. 340—279 **13 Claims**



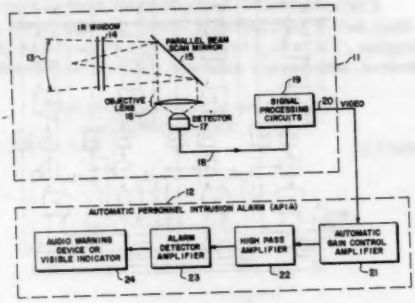
This invention relates to devices for detecting motion of the human body, and more particularly, to means for detecting when selected portions of the human body start into motion as, for example, to monitor the "timing" of athletes, such as baseball players. In one embodiment of the device there is included means for changing the on-off state of an electrical switch in response to the selected portion of the body going through a change in state of motion, the output of the associated electrical circuit controlled by the switch actuating a means of sensory stimulation, such as an auditory device or a light signal. A preferred form of this embodiment is a tubular mercury switch affixed to the body portion which is connected through an electrical circuit to a buzzer.

3,766,539

AUTOMATIC PERSONNEL INTRUSION ALARM

Bobbie G. Bradshaw, and Howard T. Graves, both of Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 1, 1972, Ser. No. 249,256
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 D **6 Claims**



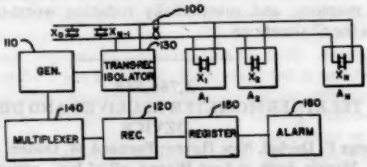
The invention is concerned with infrared viewing systems, particularly those operating in the spectral wavelength regions between 3 to 5 and 8 to 14 microns. An alarm is provided for these systems to draw particular attention to subtle or drastic changes in the scene being viewed, thereby reducing operator fatigue or relieving the operator to perform other tasks simultaneously.

3,766,540

APPLIANCE REMOVAL ALARM SYSTEM FOR MOTELS

Walter S. Schopfer, Harrison, N.Y., and Dieter Wuerth, West Boyleston, Mass., assignors to HEC Corporation, West Boyleston, Mass.

Filed Apr. 30, 1971, Ser. No. 139,049
Int. Cl. G08b *25/00*; H04q *9/00*
U.S. Cl. 340—280 **11 Claims**



A system for the prevention of the theft of televisions sets and other appliances from motels and the like requires the modification of the appliance by connecting a quartz crystal resonator across its terminals. A frequency-modulated oscillator connected to a transmission line linking all of the appliances is employed to stimulate the crystals in sequence. A transmit-receive switch operating at 100 herz frequency and

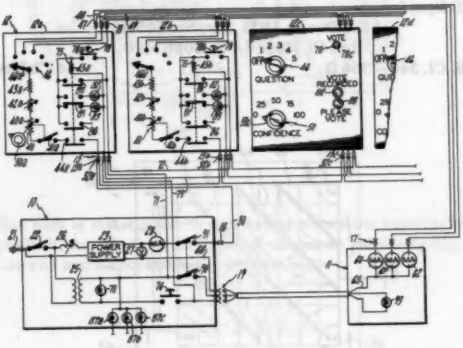
phase detection between the oscillator and the echoes from the crystals improve selectivity, while a counter keeps track of the crystals heard from. An alarm and a visual display of a number indicate the time and place of a theft.

3,766,541

VOTING MACHINE

Theodore J. Gordon, and Harold S. Becker, both of Glastonbury, Conn., assignors to Applied Futures, Inc., Greenwich, Conn.

Filed Aug. 14, 1972, Ser. No. 280,674
Int. Cl. G08b *5/00*
U.S. Cl. 340—332 8 Claims



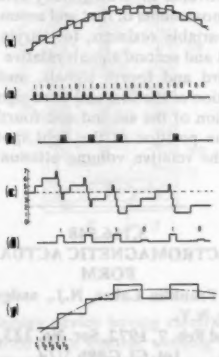
A series-parallel DC circuit with a switch for each voter to select his answer and an adjustable resistor for controlling current in the selected circuit to thereby indicate the degree of confidence of the voter in his answer.

3,766,542

CODE CONVERSION APPARATUS

Atsushi Tomozawa, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,386
Claims priority, application Japan, June 22, 1970, 45/54225
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD 9 Claims



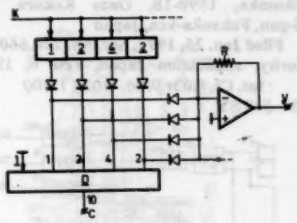
Disclosed herein is a code conversion system for converting, in the digital phase, a prediction type first code to a lower frequency, prediction type second code approximating the information content of the first code. In a first embodiment, an input delta modulation code is converted to a lower frequency output delta modulation code, while in a second embodiment, an input delta modulation code is converted to a lower frequency companding delta modulation code.

3,766,543

CURRENT DIVIDER

Jan Te Winkel, and Leonard Jan Maria Esser, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 1, 1971, Ser. No. 203,576
Claims priority, application Netherlands, Dec. 9, 1970, 7017918
Int. Cl. H03r *13/02*
U.S. Cl. 340—347 DA 16 Claims



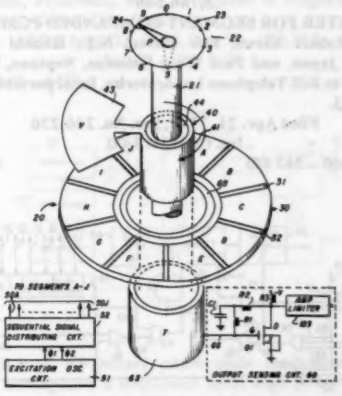
Current divider for producing a plurality of currents which are in fixed ratios to one another at a plurality of output termiansl which are connected to a sum terminal through a circuit. The currents are obtained by means of mathced transistors having parallel-connected base-emitter paths. In order to compensate for deviations in the desired currents due to the base currents of said transistors, provision is made for a compensating circuit which insures that accurately defined currents are supplied to and/or derived from each of the circuits. The compensating circuit includes at least one transistor having its emitter-collector path included in a circuit having a current deviation of one polarity while its base is connected to a circuit having a current deviation of opposite polarity.

3,766,544

ANALOG-TO-DIGITAL CONVERTER EMPLOYING ELECTROSTATIC SIGNAL COUPLING APPARATUS

James E. Batz, Northbrook, Ill., assignor to Northern Illinois Gas Company, Aurora, Ill.

Filed Nov. 19, 1971, Ser. No. 200,369
Int. Cl. G08c *9/02*
U.S. Cl. 340—347 P 19 Claims



An analog-to-digital converter includes an electrostatic encoder having a signal sensor vane mounted for rotation by a shaft to overlie different excitation segments of an excitation member at each of a plurality of predetermined positions of

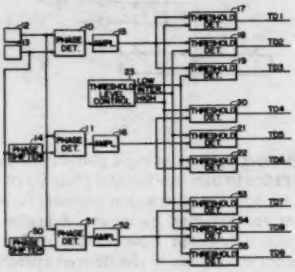
the shaft to be indicated, and signal generating means for selectively extending signals of different phases to groups of excitation segments, the signals being coupled to an output circuit over the sensor vane as a function of the position of the shaft thereby providing a different multi-bit output code over the output circuit for each predetermined position of the shaft.

3,766,545

DIGITAL PHASE DETECTOR

Mitsuo Hikosaka, 1590-18, Oaza Kokura, Kasuga-cho, Chikushi-gun, Fukuoka-ken, Japan

Filed Jan. 25, 1972, Ser. No. 220,660
Claims priority, application Japan, Feb. 6, 1971, 46/4890
Int. Cl. H03r *9/06*; H03d *13/00*
U.S. Cl. 340—347 SY **2 Claims**



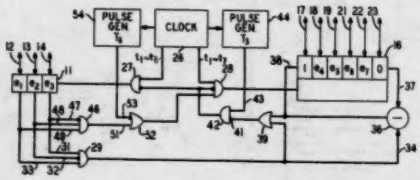
Disclosed herein is an improved apparatus for converting an analog signal of unknown phase into a binary-coded digital form. It includes a plurality of phase detectors which compare the analog signal with their associated reference signals having different phases from each other and provide output voltages corresponding to the phase differences. The outputs of the phase detectors are supplied to their associated groups of threshold detectors for comparison with different predetermined reference levels. A logic circuitry is responsive to the outputs of the threshold detectors to generate the binary-coded digital signal. When employed in a radar system, this invention enables the detection of digital video signals directly from the received signals at radio or intermediate frequency without translating them into analog video signals.

3,766,546

CONVERTER FOR SEGMENT COMPANDED PCM CODES

Marvin Robert Aaron, Fair Haven, N.J.; Hisashi Kaneko, Tokyo, Japan, and Paul Wray Osborne, Neptune, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Apr. 21, 1972, Ser. No. 246,230
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **6 Claims**



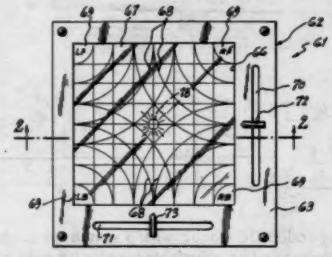
Conversion of signals in one compressed segmented PCM code format to a second compressed segmented PCM format is performed directly by means of a circuit which treats the characteristic bits and the mantissa bits serially in accordance with a conversion algorithm. The characteristic bits are applied to a counter circuit whose output is used to produce a first term of the algorithm and the mantissa bits are applied to a shift register whose output is used to generate a second term of the algorithm. The first term is subtracted from the second term and the difference is used to generate the characteristic bits of the converted signal.

3,766,547

OUTPUT CHARACTER DISPLAY DEVICE FOR USE WITH AUDIO EQUIPMENT

Tadao Saito, Saitama, and Mitsuyuki Abe, Tokyo, both of Japan, assignors to Sony Corporation, Shinagawa-ku, Tokyo, Japan

Filed Dec. 8, 1971, Ser. No. 205,813
Int. Cl. H01c *5/00*; G08b *5/00*
U.S. Cl. 340—366 D **14 Claims**



An audio recording and/or reproducing apparatus having a plurality of channels for transmitting respective signals, for example, four channels in the case of a quadriphonic apparatus, and controls for varying the volume or other transmitting condition of each signal, is provided with a display device for visually indicating the relationship of the volume or other transmitting condition of the signals. In a preferred embodiment, the display device includes a light source for projecting a spot of light on a display panel and being mounted at the intersection of two arms which cross at right angles to each other and are movable in orthogonally related directions in response to the movements of first and second balance control units, such as, variable resistors, for varying the volume attenuation of first and second signals relative to the volume attenuation of third and fourth signals, and for varying the volume attentuation of the first and third signals relative to the volume attenuation of the second and fourth signals, respectively, so that the position of the light spot on the panel is determined by the relative volume attenuations of the four signals.

3,766,548

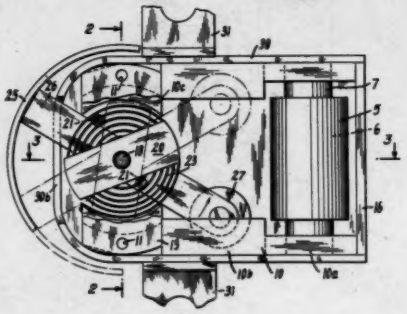
ROTARY ELECTROMAGNETIC ACTUATOR OF FLAT FORM

Donald J. Abel, Franklin Lakes, N.J., assignor to Sensonics, Inc., Hicksville, N.Y.

Filed Feb. 7, 1972, Ser. No. 223,925
Int. Cl. G08b *5/14*
U.S. Cl. 340—373 R **11 Claims**

A rotary electromagnetic actuator for actuating visual signal or other device comprises an electromagnet having a winding and a core, elongated pole pieces projecting laterally of the electromagnet parallel to one another and perpendicular to the core, parallel end plates connecting the free ends of the pole pieces, a shaft rotatably supported by the end plates midway between the pole pieces and a rotor on the shaft. Stop pins on one of the end plates limit rotation of the rotor to

define an actuated position in which the rotor together with the pole pieces and the core forms a substantially closed flux path for the electromagnet and a rest position in which the



flux path is interrupted. A hair spring biases the rotor to rest position. An arm fixed on the shaft carries an indicating flag at one end and a counterweight at the other.

3,766,549

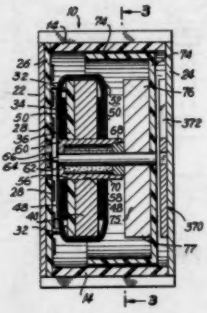
MAGNETIC WHEEL NUMERICAL DISPLAY DEVICE

Robert A. Kulka, 3 Whittier Way, Livingston, and Michael Wiplich, 82 Grace Rd., Lake Hiawatha, both of N.J.

Filed Nov. 18, 1970, Ser. No. 90,528

Int. Cl. H04i 3/00; G08b 5/00

U.S. Cl. 340—378 R **27 Claims**



A numerical display device having electrically energizable coil means mounted on a central winding form means for selectively providing a magnetic field selectively oriented in each of a plurality of discrete alignments in the region adjacent the coil means. A freely rotatable permanent magnet coupled with a symbol carrying means is positioned adjacent the coil means in said magnetic field for selectively assuming a corresponding plurality of discretely oriented alignments. A plurality of spaced symbols are positioned on an outer face of said symbol carrying means for selective positioning at a predetermined location in response to selected ones of said discrete alignments of said magnetic field.

3,766,550

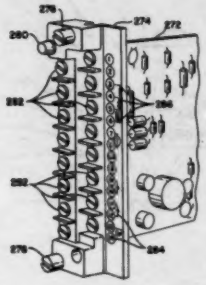
SOLID-STATE PROCESS CONTROL MODULE WITH INDICIA TO ASSOCIATE OUTPUT SIGNAL WITH TERMINAL

James J. Vandemore, Geneseo, Ill., and Donald E. Henry, Davenport, Iowa, assignors to E. W. Bliss Company, Canton, Ohio

Division of Ser. No. 812,486, Sept. 26, 1968, Pat. No. 3,621,519. This application Mar. 4, 1971, Ser. No. 121,110

Int. Cl. G09f 9/14; H01r 9/00

U.S. Cl. 340—381 **3 Claims**



There is provided a process control system including a plurality of functional modules for sequencing a plurality of operations of a machine, such as a plastic molding machine, wherein the functional modules include a static electrical control circuit. The static control circuit is comprised of an input circuit for receiving alternating-current signals; static direct-current logic means for performing an electrical function and then providing a direct-current output signal; static direct current to alternating current converter means, such as a triac switching circuit, coupled to the logic means for providing an alternating-current output signal from the direct-current signal; and, actuatable means such as a solenoid controlled valve, coupled to the converter means, for upon energization, providing at least one of the plurality of machine operations.

3,766,551

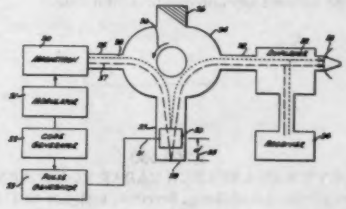
HIGH POWER, BROAD BANDWIDTH MODULATOR OF RF ENERGY

Joseph Burnsweig, Jr., Los Angeles, Calif., and Robert C. Heimiller, Plymouth, Mich., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 22, 1965, Ser. No. 489,118

Int. Cl. G01s 9/02

U.S. Cl. 343—5 DP **9 Claims**



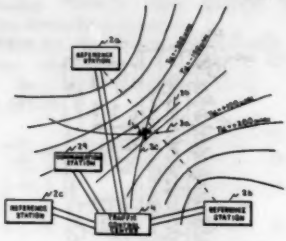
A high-level RF binary phase code modulating system wherein intelligence is impressed upon high power level RF energy by a predetermined binary code being generated by a code generator which determines the condition of a multipactor located in a path of RF energy passing through a waveguide junction. By permitting energy to pass through the multipactor and reflect either from a short or from the multipactor input port, as determined by the code, phase shifts are impressed upon the carrier signal.

3,766,552

UNIFIED AREA SURVEILLANCE, COMMUNICATION AND MOBILE STATION GUIDANCE SYSTEM

Marian S. Hajduk, 145-77 9th Ave., Whitestone, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,663
Int. Cl. G01s 9/02
U.S. Cl. 343—6 R **50 Claims**



A unified area surveillance, communication and mobile station guidance system comprising a traffic control (TC) center having a plurality of reference stations associated therewith, the mobile station including means for transmitting calling pulses having a predetermined repetition period which pulses arrive and are received by said reference stations which information is then fed to said TC center to compute the position of and track said mobile station with respect thereto and to continuously track said calling pulses, said TC center thereafter causing the generation of an interrogation signal to said mobile station via transmissions generated from three of said reference stations at such times that said transmissions arrive only in the vicinity of said selected mobile station in an established interrogating pattern having an established time relationship with the aboard generated calling pulses to provide reliable mobile station selectivity, the reception of said interrogation signal enabling direct communication between said TC center and the aboard mobile station equipment to provide time-multiplexed voice communication and collision avoidance and mobile station guidance data which may be used for automatic operation of said mobile station, communication between the mobile station and the TC center is in digital form and in particular in binary coded decimal form to thereby provide said selected mobile station with collision avoidance, enroute navigation and approach data which data may be directly displayed on a digital display aboard said mobile station without any conversion of the data.

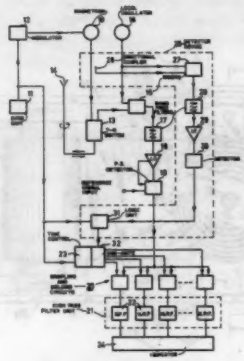
3,766,553

DEVICE IN A SEARCH RADAR EQUIPMENT

Bengt Bergkvist, Jakobsberg, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,334
Claims priority, application Sweden, Apr. 15, 1971, 4876/71
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 **2 Claims**

A pulse radar equipment comprising a repeatedly triggered transmitter tube cooperating with antenna means for repeated transmission of radar pulses and receiver means for reception of echo pulses caused by energy reflected from targets in the direction of the transmitted pulses and further comprising a detector which is sensitive for absence of transmitted pulse after triggering of the tube or for a transmitted pulse having an amplitude below a given threshold level and adapted to block the receiver means during echo intervals following such missing or reduced pulse.

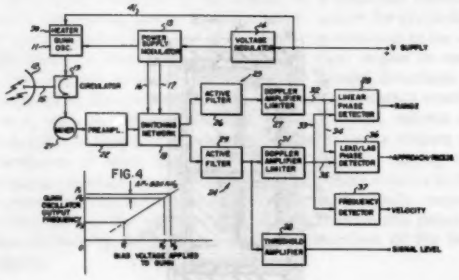


3,766,554

RANGE CUTOFF SYSTEM FOR DUAL FREQUENCY CW RADAR

Carl P. Tresselt, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 1, 1971, Ser. No. 119,780
Int. Cl. G01s 9/24
U.S. Cl. 343—14 **26 Claims**



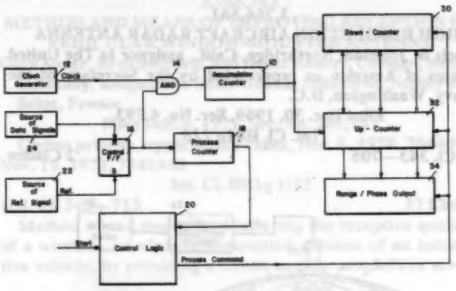
A system for making a CW radar system insensitive to targets lying beyond a preselected maximum range is described. Two discrete frequencies are alternately transmitted so that two doppler frequencies are produced in the receiver. The phase relationship between the two doppler signals is indicative of the range between the target and transmitting antenna. Range cutoff is achieved by turning off the transmitter for an interval between the transmission of the two frequencies and by gating the homodyne receiver so that video output is provided only during the last quarter of each transmitted signal. Because the transmitter and receiver are inactive at chosen time intervals, complete receiver insensitivity is realized for targets beyond the cutoff range, irrespective of the size and other physical characteristics of the targets.

3,766,555

COMPUTING DIGITAL AVERAGING PHASE METER

Richard E. Watt, San Diego, Calif., assignor to Cubic Corporation, San Diego, Calif.

Filed Sept. 28, 1972, Ser. No. 293,106
Int. Cl. G01s 9/24; G01r 25/00
U.S. Cl. 343—14 9 Claims



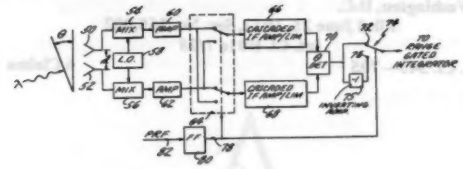
In a ranging system, a first modulating signal is detected as an indication of the "fine" range from the transmitter to the target. A second modulating signal, a combined signal including "fine" range signal, and a "coarse" range signal is also detected. A digital phase meter sequentially measures the phase of the "fine" modulating signal and the combined signal, referred to a common reference. The results are simultaneously algebraically combined to obtain an indication of the "fine" range and the "coarse" range.

3,766,556

CHANNEL SWITCHING PHASE INTERFEROMETER RADAR RECEIVER

Salvatore Amoroso, Jr., Fairfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 28, 1972, Ser. No. 238,855
Int. Cl. G01s 3/46, 9/02
U.S. Cl. 343—16 R 4 Claims



Errors causd by IF amplifier and phase detector imbalance and asymmetry are overcome in a phase interferometer radar receiver by ultimate application of the respective antenna inputs to different IF amplifier/limiter channels. The output of the IF amplifier channels are cross coupled and fed to a phase detector employing a quadrature hybrid. The output of the phase detector is switched in synchronism with the IF amplifier input and the non-linearities resulting from cross coupling are linearized.

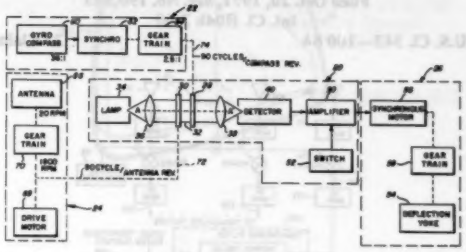
3,766,557

ELECTRO-OPTICAL DIFFERENTIAL

Albert S. Dallard, San Pateo, Calif., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 867,292, Oct. 17, 1969, abandoned.
This application May 13, 1971, Ser. No. 143,178
Int. Cl. G01s 9/02; G01d 5/36
U.S. Cl. 343—55 T 12 Claims

An electro-optical differential device for combining the angular rotation of a ship's gyrocompass with the angular rotation of a radar antenna to compensate a radar PPI display for turning movements of a ship. Two polarizing disks are placed within a beam of light, one disk connecting with the gyrocompass and the other connecting with the antenna, and are



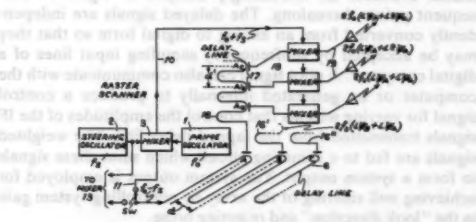
rotated relative to each other to modulate the light. Electrical signals produced upon detection of the light beam energize a synchronous motor which rotates the PPI display in synchronism with the light modulation.

3,766,558

RASTER SCAN ANTENNA

John A. Kuechken, Pittsford, N.Y., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 17, 1971, Ser. No. 181,453
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA 3 Claims



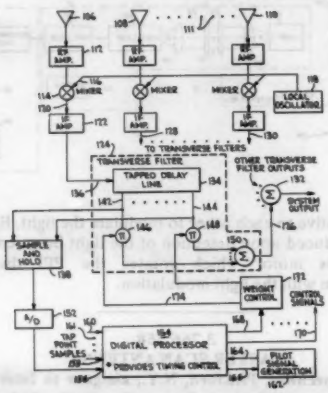
A broadside array antenna arrangement capable of scanning electronically in one or two planes, wherein the transmitted or received frequency remains fixed although beam steering is effected by progressive phase shifts introduced to the various array elements as provided by the expedient of frequency variations. A prime oscillator frequency f_o is mixed with a variable steering oscillator frequency f_s to produce sum and difference frequencies $f_o + f_s$ and $f_o - f_s$. The latter is fed to a delay line having a plurality of taps spaced apart in accordance with the particular arrangement of array elements, the delay line providing in the frequency signal $f_o - f_s$ progressive phase shifts from tap to tap. The individual tap outputs are separately mixed with the sum frequency signal $f_o + f_s$, wherein N separate outputs are simultaneously derived having the same frequency of $2f_s$ but varying from one another progressively in phase. Variation of f_s, which causes the phase relationship between the N outputs to change as they are fed to the radiators in one-to-one correspondence, thus provides a sweep of the beam in one plane. Raster type scanning is provided by introducing a multi-tapped secondary delay line at each tap of the primary delay line and mixing instead the tap outputs of each secondary delay line individually with $f_o + f_s$ and applying the resultant $2f_s$ outputs to individual ones of a corresponding element row of a two-dimensional array. The tapped spacings on each of the secondary delay lines relative to the tapped spacings of the primary delay line is such as to provide scanning of an order of magnitude more sensitive in one plane.

3,766,559

ADAPTIVE PROCESSOR FOR AN RF ANTENNA

Wade E. Butcher, Jr., Indialantic, Fla., and Robert J. Sims, Red Bank, N.J., assignors to Harris-Intertype Corporation, Cleveland, Ohio

Filed Oct. 20, 1971, Ser. No. 190,843
Int. Cl. H04b 7/00
U.S. Cl. 343—100 SA 22 Claims



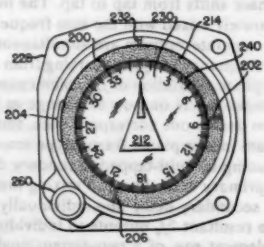
The elements of an RF antenna array are individually connected to mixer circuits to produce a plurality of distinct IF signals. Each signal is fed to a multi-tapped delay line which makes available an increasingly delayed IF signal at subsequent points therealong. The delayed signals are independently converted from an analog to digital form so that they may be accepted by subfrequency sampling input lines of a digital computer. A pilot signal can also communicate with the computer or be generated internally to produce a control signal for varying weights that control the amplitudes of the IF signals transmitted from the tapped delay line. The weighted signals are fed to a summing circuit which sums these signals to form a system output. The system output is employed for achieving null steering of the array by controlling system gain in the "look direction" and rejecting noise.

3,766,560

RADIO RECEIVING APPARATUS FOR LOCATING A PLURALITY OF TARGET TRANSMITTERS

Kenneth F. Bornhorst, Dayton; Jack L. Monroe, Tipp City; Alvin E. Culbertson, Dayton, all of Ohio; David E. Thomas, Columbia, S.C., and Donald E. Drake, Tipp City, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Feb. 11, 1972, Ser. No. 225,519
Int. Cl. G01s 3/58
U.S. Cl. 343—118 13 Claims



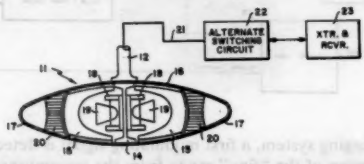
Apparatus combining a UHF radio receiver with digital circuitry for processing and displaying signals indicating the location of one or more remotely located target radio transmitters, which apparatus includes a signal storing bearing indicator device operated in synchronism with a continuously rotating receiver antenna, and which apparatus also includes a refined AGC system and a target verifying correlation system for improving reliability of the information presented to an operator.

3,766,561

HIGH RESOLUTION AIRCRAFT RADAR ANTENNA

Francis B. Johnson, Northridge, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1969, Ser. No. 4,793
Int. Cl. H01q 1/28
U.S. Cl. 343—705 2 Claims



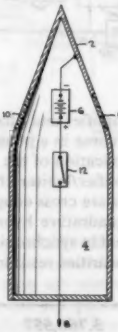
A high resolution aircraft radar antenna having a pair of long alternately activated radio frequency (RF) antenna arrays in back-to-back relation within an elliptical cross-sectional boom of good aerodynamic characteristics supported on a retractable mounting from an aircraft and capable of producing slow boom rotation beneath the aircraft in the extended condition and streamlined with the fuselage in the retracted position for low drag to provide 360° radar search scanning and tracking operation.

3,766,562

CONTROL OF ELECTRON DENSITY ENVELOPING HYPERSONIC VEHICLES

Irvin Pollin, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 21, 1972, Ser. No. 265,002
Int. Cl. H01q 1/28
U.S. Cl. 343—705 6 Claims



A device wherein a portion of an electrical conducting interface of a vehicle in hypersonic flight is electrically biased relative to the surrounding plasma to cause currents to pass thru the plasma. Proper selection of the bias causes a current to pass thru the plasma, thru a battery-type device and into the vehicle wake to thereby reduce the electron density and/or

alter the electron distribution enveloping the vehicle. Reduction of the electron density and/or alteration of the electron distribution in the plasma increases the accuracy of communications to or from the vehicle to permit proper functioning of vehicle communications, guidance, arming and fuzing as well as other possible onboard equipment.

3,766,563

METHOD AND MEANS OF IMPROVING RECEPTION OF VEHICULAR WINDOW-MOUNTED ANTENNA

Gerd Sauer, Broichweiden, and Heinz Kunert, Cologne, both of Germany, assignors to Saint-Gobain Industires, Neuilly-sur-Seine, France

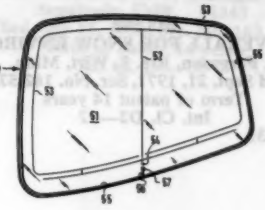
Filed Dec. 6, 1971, Ser. No. 205,147

Claims priority, application France, Dec. 8, 1970, 7044007; Nov. 19, 1971, 7141442

Int. Cl. H01q *1/32*

U.S. Cl. 343—713 17 Claims

Method of and means for improving the receptive qualities of a window- or windshield-mounted antenna of an automotive vehicle, by providing a closed annular conductive screen extending about, exteriorly of, adjacent, and in fixed relation with the antenna secured to the surface of a window or windshield, and in grounding such screen from a point thereof to a selected point of the vehicle or the coaxial cable lead-in from antenna to receiver.

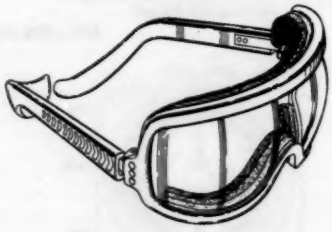


DESIGNS

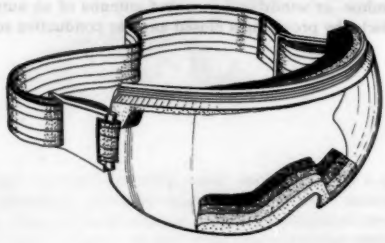
OCTOBER 16, 1973

228,582
SPORTS COVERALL FOR SNOW ENVIRONMENT
Donald P. Ferguson, Rte. 2, Wirt, Minn. 56688
Filed Sept. 21, 1971, Ser. No. 182,571
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—31

228,583
SPORT GOGGLES
Conrad Leblanc, 33 Bartlett St., Leominster, Mass. 01453
Filed Aug. 25, 1971, Ser. No. 175,014
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

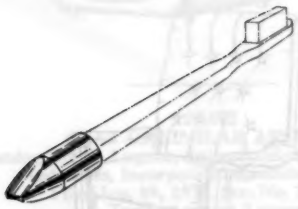


228,584
SPORT GOGGLES
Conrad Leblanc, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Aug. 25, 1971, Ser. No. 174,836
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234

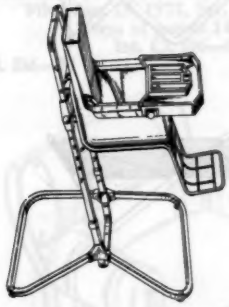


228,585
BRUSH
Baard Spydevold, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Sept. 14, 1971, Ser. No. 180,540
Claims priority, application Norway May 21, 1971
Term of patent 14 years
Int. Cl. D4—*01*
U.S. Cl. D4—17

228,586
TOOTH STAIN-REMOVER TIP FOR TOOTHBRUSHES AND THE LIKE
Lewis Janes Halberstadt, Williamsburg, Mass., assignor to Vistron Corporation, Cleveland, Ohio
Filed Sept. 3, 1971, Ser. No. 177,916
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—24



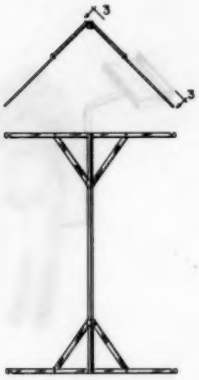
228,587
HIGH CHAIR WITH REMOVABLE SEAT
Lawrence Blazey, Bay Village, David Silverstrom, Lyndhurst, and Elmer Rocker, Shaker Heights, Ohio, assignors to Century Products, Inc., Cleveland, Ohio
Filed Feb. 7, 1972, Ser. No. 224,402
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—8



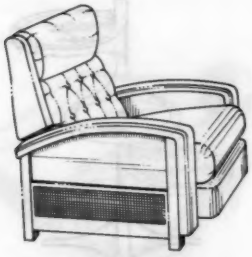
228,588
COMBINED BAG LOADING TRAY AND SUPPORT
Jack E. Gruden, 16817 Ballinger St., Sepulveda, Calif. 91343
Filed July 15, 1971, Ser. No. 163,134
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—20

228,589
MERCHANDISE DISPLAY DEVICE
Billy Moretini, Chicago, Ill., assignor to International Design Corporation, Chicago, Ill.
Filed Oct. 27, 1971, Ser. No. 193,231
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24

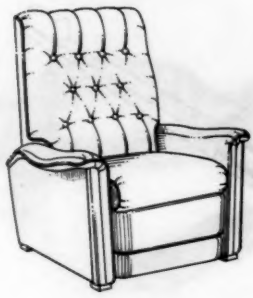
228,590
DISPLAY STAND OR THE LIKE
Peter J. Purpura, Corning, N.Y., assignor to Corning Glass Works
Filed May 14, 1971, Ser. No. 143,735
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—29



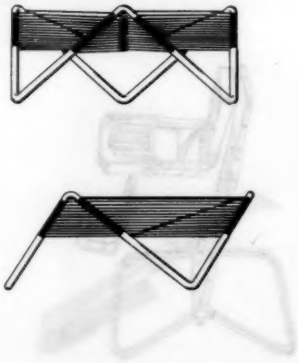
228,591
LOUNGE CHAIR
Don Ray Gill, Hammond, Ind., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed June 1, 1971, Ser. No. 149,111
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—39



228,592
CHAIR
Eugene J. Costabile, Oak Lawn, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Nov. 26, 1971, Ser. No. 202,739
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—39



228,593
CHAIR
Ching-Yu Chang, 708 Pine St., Philadelphia, Pa. 19106
Filed Apr. 6, 1972, Ser. No. 241,892
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—55

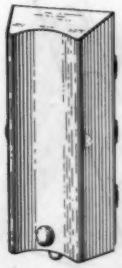


228,594
SEAT OR SIMILAR ARTICLE
Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,197
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

228,595
SEAT OR SIMILAR ARTICLE
Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,209
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

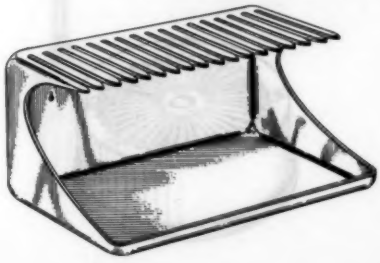
228,596
SEAT OR SIMILAR ARTICLE
Henning Korch, Lugano, Switzerland, assignor to Burris Industries, Incorporated, Lincolnton, N.C.
Filed Jan. 19, 1972, Ser. No. 219,195
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

228,597
COMBINED TOOTHBRUSH HOLDER AND TOOTHPASTE DISPENSER
Wayne Paul Hilgendorff and Sue J. Hilgendorff, both of 7061 S. 17th East St. 84121, and Norman Alexander Hilgendorff, 450 E. Robert Ave. 84115, all of Salt Lake City, Utah
Filed Dec. 20, 1971, Ser. No. 210,290
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—91



228,598
DISPLAY TRAY OR SIMILAR ARTICLE
Harley H. Mattheis, Verona, N.J., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Jan. 24, 1972, Ser. No. 220,557
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—132

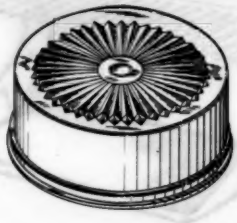
228,599
SUPPORT RACK FOR HAIR CURLERS OR THE LIKE
Stephen E. Greenlaw, 201 E. Skyline Drive, La Habra, Calif. 90631
Filed July 28, 1971, Ser. No. 167,078
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—134



228,600
COMBINED BOOK SUPPORT AND FILM STRIP HOLDER
Wesley Moffatt, 19 Oakwood Crescent, Scarborough, Ontario, Canada
Filed Dec. 30, 1971, Ser. No. 172,957
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—184

228,601
PICTURE FRAME
Peter J. Menini, 814 N. 2nd Ave., Maywood, Ill. 60153
Filed Apr. 3, 1972, Ser. No. 240,888
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—244

228,602
CONTAINER CLOSURE OR THE LIKE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Feb. 3, 1970, Ser. No. 21,250
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131



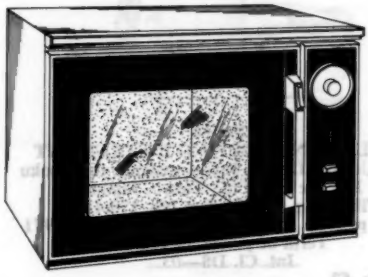
228,603
CONTAINER CLOSURE OR THE LIKE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Feb. 3, 1970, Ser. No. 21,254
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—131

228,604
FONDUE PLATE
Fred Press, White Plains, N.Y., assignor to Styson, Inc., New York, N.Y.
Filed July 9, 1971, Ser. No. 161,424
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15 C

228,605
PLATE OR THE LIKE
Ottorino N. Mercadante, Corning, N.Y., assignor to Corning Glass Works
Filed Jan. 12, 1972, Ser. No. 217,422
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—36

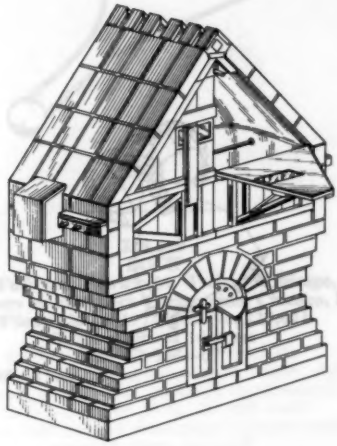
228,606
TRAY
Gerald F. Blount, Milwaukie, Oreg., assignor to Peco, Inc., Portland, Oreg.
Filed Sept. 13, 1972, Ser. No. 288,724
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—37

228,607
PORTABLE MICROWAVE OVEN OR SIMILAR ARTICLE
Thomas J. Binzer and Charles H. Schmitt, Louisville, Ky., Peter H. Wooding, Providence, R.I., and Yoshio Suganoya, Yamatokoriyama, and Takao Miyake, Yao, Japan, assignors to General Electric Company
Filed Apr. 27, 1972, Ser. No. 248,350
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—128



228,608
VACUUM CLEANER BRUSH ATTACHMENT
Ada M. Johnson, 1631 Tam O'Shanter 6–B, Seal Beach, Calif. 90740
Filed Nov. 5, 1970, Ser. No. 25,207
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D7—174

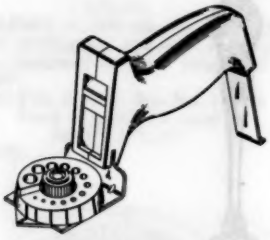
228,609
OUTDOOR BARBECUE-OVEN COMBINATION
Robert Tarsitano, Jr., 305 E. Elm St., Lombard, Ill. 60148
Filed Mar. 27, 1972, Ser. No. 238,724
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—107



228,610
FORK OR SIMILAR ARTICLE OF FLATWARE
Richard C. Gavette, Hampton, N.H., assignor to Fortunoff Silver Sales, Inc., Westbury, N.Y.
Filed July 14, 1972, Ser. No. 271,854
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—137

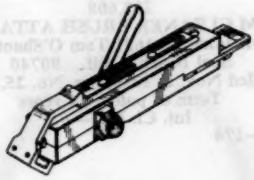
228,611
LITTER BAG
Thelma I. Graham, 630 Linden Drive, Oxnard, Calif. 93030
Filed Mar. 30, 1972, Ser. No. 239,861
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

228,612
DRILL GUIDE
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Dec. 2, 1971, Ser. No. 204,409
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



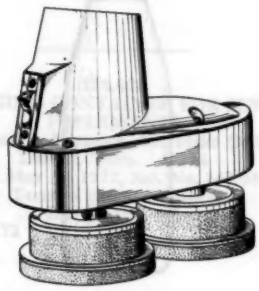
228,613
CORKSCREW
Cipriano Ghidini, Brescia, Italy, assignor to Ray Control Corp., New York, N.Y.
Filed Aug. 31, 1972, Ser. No. 285,167
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D8—42

228,614
INSULATION STRIPPING INSTRUMENT
Isamu Uchida, Urawa, Japan, assignor to Kosoku Electric Co., Ltd., Tokyo, Japan
Filed Aug. 9, 1971, Ser. No. 170,418
Claims priority, application Japan Apr. 24, 1971
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—52

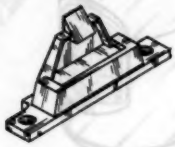


228,615
ELECTRIC SCISSORS
Richard B. Hall, Glen Ellyn, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 10, 1972, Ser. No. 270,127
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—61

228,616
PORTABLE POLISHING DEVICE
Takayoshi Tomo, 220–1 Hirano Setoguchi-cho, Higashi Sumiyoshi-ku, Osaka, Japan
Filed Sept. 2, 1971, Ser. No. 177,535
Claims priority, application Japan Mar. 4, 1971
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62

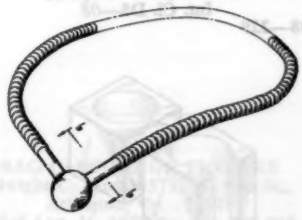


228,617
WINDOW LOCK
Raymond M. Dallaire, St. David, Quebec, Canada, assignor to Plastiques P. H. (1972) Inc., P. H. Plastics (1972) Inc., Levis, Quebec, Canada
Filed Jan. 13, 1971, Ser. No. 106,295
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—111



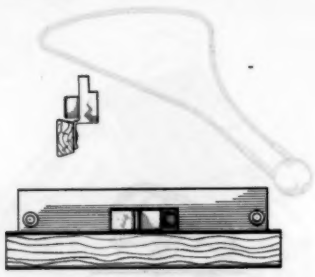
228,618
LOCK
Sidney Falk, Chicago, Ill., assignor to Fort Lock Corporation, Chicago, Ill.
Filed Feb. 11, 1972, Ser. No. 225,693
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113

228,619
LOCK
Sidney Falk and Patrick M. Trainor, Chicago, Ill., assignors to Fort Lock Corporation, Chicago, Ill.
Filed Feb. 25, 1972, Ser. No. 229,621
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—113

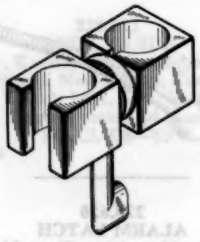


228,620
ALARM LATCH
Paul Maddison Hawkins, Afton Township, and John H. Lee, Woodbury Township, Washington County, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 29, 1971, Ser. No. 213,803
Term of patent 14 years
Int. Cl. D8—*07*; D29—*99*
U.S. Cl. D8—131

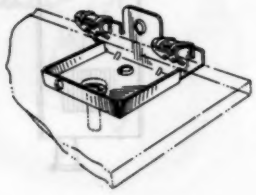
228,621
DOOR LATCH
Martin R. Lambertz, New Hamburg, and Roger Erb, Stratford, Ontario, Canada, assignors to Hahn Brass Limited, New Hamburg, Ontario, Canada
Filed Oct. 20, 1972, Ser. No. 299,521
Term of patent 7 years
Int. Cl. D8—*06, 07*
U.S. Cl. D8—150



228,622
HOLDER FOR HAND SHOWER
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Nov. 12, 1971, Ser. No. 198,495
Claims priority, application Sweden May 14, 1971
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—229



228,623
BEAM CLAMP
Raymond L. Martz, Palatine, Ill., assignor to Minerallac Electric Company, Chicago, Ill.
Filed June 26, 1972, Ser. No. 247,927
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



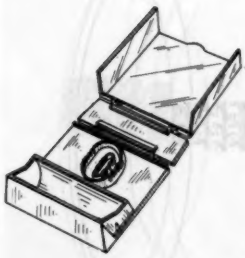
228,624
SHOWER CURTAIN HOLDER
Ruth E. Imershein, Judith A. Imershein, and Sara L. Imershein, Valley Stream, Long Island, N.Y., assignors to William L. Imershein and Charles L. Imershein, both of Valley Stream, Long Island, N.Y.
Filed Apr. 4, 1972, Ser. No. 241,097
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248

228,625
BOTTLE
Ronald A. Pearce, Lakewood, Colo., assignor to Coors Container Company, Golden, Colo.
Filed Feb. 22, 1971, Ser. No. 117,884
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1

228,626
COMBINED RECESSED JAR AND FOOD PACKET
Robert H. Knies, Fullerton, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.
Filed Aug. 4, 1971, Ser. No. 169,159
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—10

228,627
JAR
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Feb. 18, 1972, Ser. No. 227,708
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—156

228,628
PACKAGING CONTAINER FOR SEWING IMPLEMENTS
Edmund A. Kustusch, 581 Fiske Drive, Detroit, Mich. 48214
Filed May 10, 1971, Ser. No. 142,086
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—172

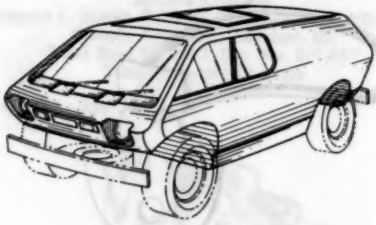


228,629
CASE FOR A SAFETY RAZOR AND BLADE DISPENSER
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 11, 1972, Ser. No. 252,520
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186

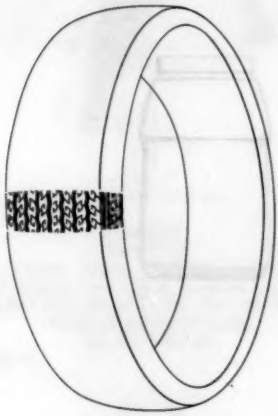
228,630
BAG CLOSURE OR THE LIKE
Dwight C. Brown, 5712 N. 20th St., Arlington, Va. 22205
Filed Aug. 16, 1972, Ser. No. 281,005
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252

228,631
CART
Harry Rogove and Roslyn Rogove, Bayside, Queens, N.Y., assignors to Remember When Sweet Shoppe, Inc., Valley Stream, N.Y.
Filed Aug. 29, 1972, Ser. No. 284,650
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D12—22

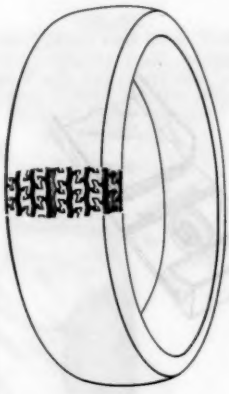
228,632
LAND VEHICLE BODY
Curtis M. Brubaker, 11616 Chenault St., Los Angeles, Calif. 90049; and Harry B. Wykes, 3103 Highland Ave.; and Robert Todd Gerstenberger, 903 Highland Ave., both of Manhattan Beach, Calif. 90266
Filed Nov. 1, 1971, Ser. No. 194,771
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—90



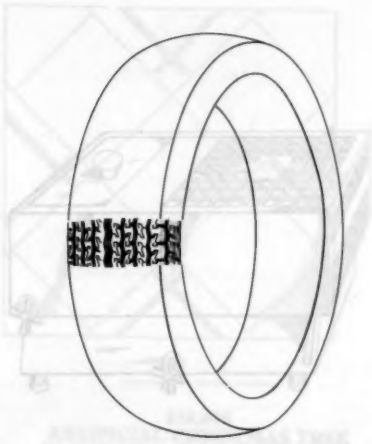
228,633
PNEUMATIC TIRE TREAD AND BUTTRESS
James H. Bierbusse, Grosse Pointe Woods, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Apr. 26, 1972, Ser. No. 247,931
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—142



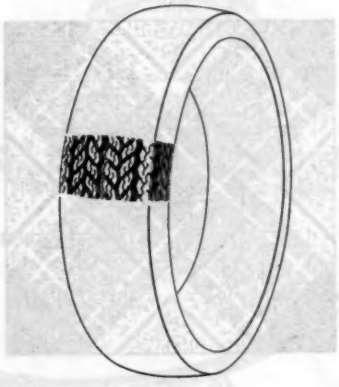
228,634
PNEUMATIC TIRE TREAD AND BUTTRESS
James H. Bierbusse, Grosse Pointe Woods, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,462
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



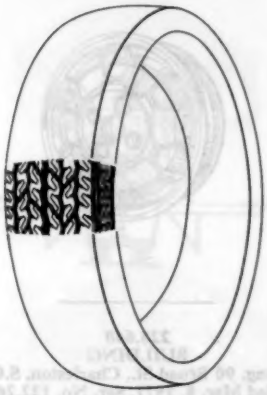
228,635
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 22, 1972, Ser. No. 282,655
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—143



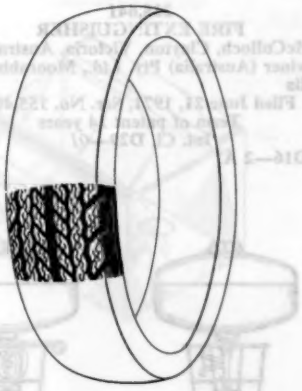
228,636
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, and Robert N. Kienle, Grosse Pointe, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Feb. 22, 1972, Ser. No. 228,463
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—149



228,637
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Apr. 20, 1972, Ser. No. 246,105
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151



228,638
PNEUMATIC TIRE TREAD AND BUTTRESS
Clarence H. Vizina, Jr., Ferndale, and Robert N. Kienle, Grosse Pointe, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed July 7, 1972, Ser. No. 269,846
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

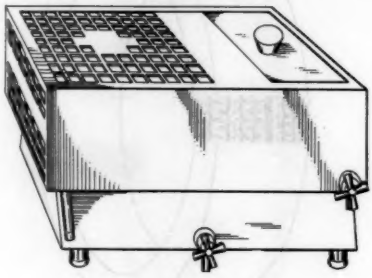


228,639
WHEEL RIM
Bjorn Erik Anders Envall and Ralph Einar Jonsson, Trollhattan, Sweden, assignors to Saab-Scania AB, Linkoping, Sweden
Filed Dec. 15, 1971, Ser. No. 208,522
Claims priority, application Sweden June 16, 1971
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—211

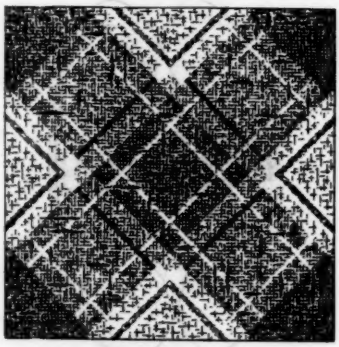
228,640
BUILDING
John C. Long, 90 Broad St., Charleston, S.C. 29401
Filed Mar. 8, 1971, Ser. No. 122,264
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 B

228,641
FIRE EXTINGUISHER
Alistair McCulloch, Clayton, Victoria, Australia, assignor to Graviner (Australia) Pty. Ltd., Moorabbin, Victoria, Australia
Filed June 21, 1971, Ser. No. 155,400
Term of patent 14 years
Int. Cl. D29—*01*
U.S. Cl. D16—2 A

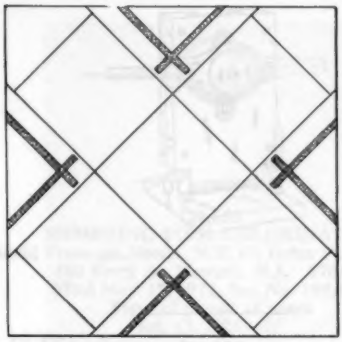
228,642
WATER DISTILLING APPARATUS
Keith Chasteen and Paul S. Giovagnoli, Kansas City, Mo., assignors to Wilco Water-Stills, Incorporated, Kansas City, Mo.
Filed Oct. 15, 1971, Ser. No. 189,812
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D16—2 B



228,643
FLOOR TILE OR SIMILAR ARTICLE
John Stanley Madsen, Belle Mead, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Nov. 22, 1971, Ser. No. 201,257
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B



228,644
FLOOR TILE OR SIMILAR ARTICLE
John Stanley Madsen, Belle Mead, N.J., assignor to GAF Corporation, New York, N.Y.
Filed Nov. 22, 1971, Ser. No. 201,258
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D18—2 B

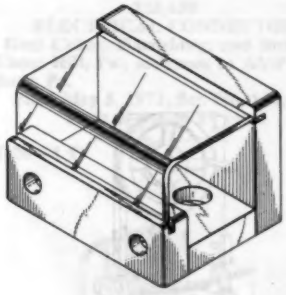


228,645
ARTIFICIAL CHRISTMAS TREE
Elinor B. Wilson, 5664 Canass Court, Newark, Calif. 94560
Filed Jan. 6, 1972, Ser. No. 215,985
Term of patent 3½ years
Int. Cl. D11—*04*
U.S. Cl. D29—1 A

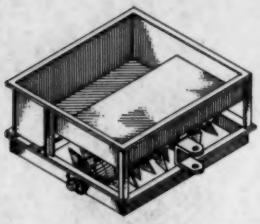
228,646
CAT AND PUPPY COLLAR
Claud W. Kissin, Fort Lee, N.J., assignor to Hartz Mountain Pet Foods, Inc., Harrison, N.J.
Filed Mar. 14, 1972, Ser. No. 234,690
Term of patent 14 years
Int. Cl. D30—*04*
U.S. Cl. D30—38

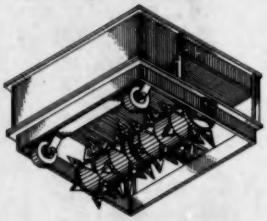
228,647
PLAYGROUND SEESAW
Claude W. Ahrens, West Highway 6, Grinnell, Iowa 50112
Filed July 24, 1972, Ser. No. 274,282
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 C

228,648
TOY TRUCK CAB
Jorma Vennola, Princeton, and Erkki Pekka Korpijaako, Heightstown, N.J., assignors to Columbia Broadcasting Systems, Inc.
Filed July 12, 1972, Ser. No. 270,928
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

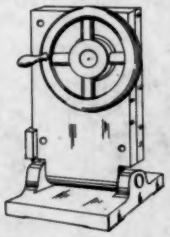


228,649
LAWN TREATING TRAILER
Robert Picardat, 7712 Ridgecrest Drive, Alexandria, Va. 22380
Filed May 6, 1971, Ser. No. 141,089
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 R

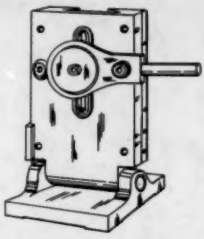




228,650
ROTARY WHEEL ADJUSTING APPARATUS FOR DRESSING A GRINDING WHEEL
Dikran Gerdjikian, 40 Austin Ave., Amityville, N.Y. 11701
Filed Jan. 26, 1972, Ser. No. 221,124
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1 R

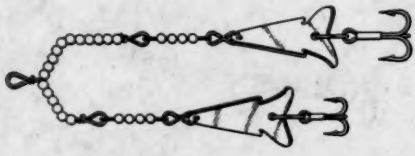


228,651
LEVER ADJUSTING APPARATUS FOR DRESSING A GRINDING WHEEL
Dikran Gerdjikian, 40 Austin Ave., Amityville, N.Y. 11701
Filed Jan. 26, 1972, Ser. No. 221,132
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1 R



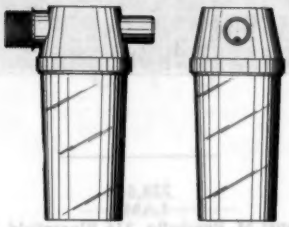
228,652
ELECTRONIC MOSQUITO REPELLER
Darrell De Los Byerley, 3903 N. Millbury Ave., Baldwin Park, Calif. 91706; Dorothy May Banks, 833 Canyon Crest Road, Sierra Madre, Calif. 91024; Peter T. Kirwan, 30 Marymont Ave., Atherton, Calif. 94025; and Walter I. Nelson, 171 Belvedere Ave., San Carlos, Calif. 94070
Filed Nov. 11, 1971, Ser. No. 198,041
Term of patent 7 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

228,653
FISH LURE
Ewell J. Harris, Rte. 3, Box 135A, Adrian, Mich. 49221
Filed June 21, 1972, Ser. No. 264,791
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



228,654
FISHING LURE
Frederick W. Fielder, 3971 Sherwood Forest, Apt. 246E, Dallas, Tex.
Filed Aug. 11, 1972, Ser. No. 279,822
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

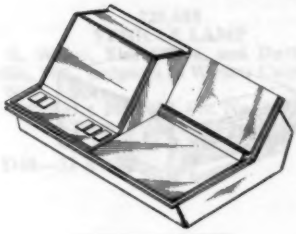
228,655
SWIMMING POOL CHLORINATOR
Donald Frascone, Bronx, N.Y. (% Ortex Products, Inc., 560 Ferry St., Newark, N.J. 07015)
Filed Nov. 17, 1971, Ser. No. 199,818
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



228,656
ADJUSTABLE BRACKET AND FILTER FOR HOME AQUARIUMS
David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed Dec. 22, 1971, Ser. No. 211,158
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

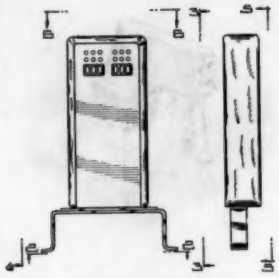
228,657
HAND OPERATED SPRAYER
Douglas W. Anderson, Palatine, Ill., assignor to AFA Corporation of Florida
Filed Aug. 11, 1971, Ser. No. 170,860
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17

228,658
TEST SCORING MACHINE
Charles Jess Ortega, Van Nuys, and Russell E. Orr II, Canoga Park, Calif., assignors to Scan-Tron Corporation, Los Angeles, Calif.
Filed Nov. 3, 1971, Ser. No. 195,533
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D25—1 R

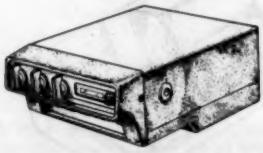


228,659
ELECTRICAL CONNECTOR
Nicholas Gust Gekas, Harrisburg, and Boyd Hutchinson Cree, Camp Hill, Pa., assignors to AMP Incorporated, Harrisburg, Pa.
Filed May 5, 1971, Ser. No. 140,412
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 C

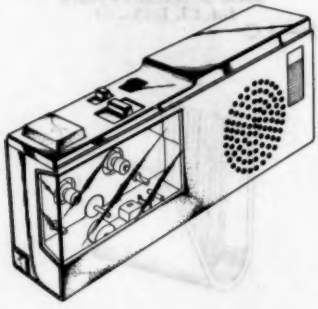
228,660
VEHICLE COMMUNICATIONS AND CONTROL CONSOLE
Don W. Noren, Redwood City, Calif., assignor to Noren Products, Inc., Redwood City, Calif.
Filed May 10, 1971, Ser. No. 142,117
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 K



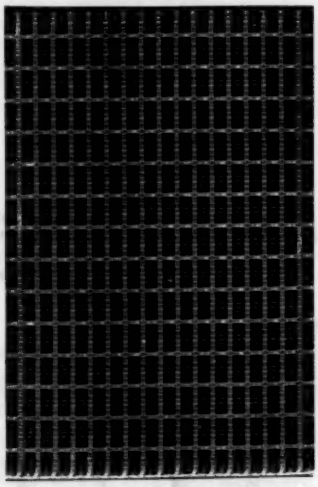
228,661
TAPE PLAYER FOR AUTOMOBILE
Koichi Nishimura, Tokyo, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kodoma City, Osaka, Japan
Filed June 25, 1971, Ser. No. 157,080
Claims priority, application Japan Dec. 28, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



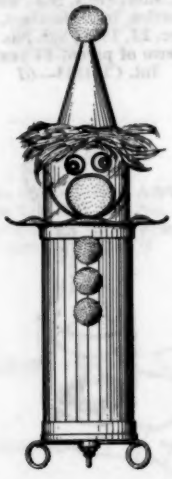
228,662
TAPE RECORDER
Masayuki Sakuma, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Oct. 13, 1971, Ser. No. 189,057
Claims priority, application Japan Apr. 20, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



228,663
CURTAIN FABRIC
Peter Schroeder, Arni, Switzerland, assignor to Gardisette International AG, Zurich, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,882
Claims priority, application Germany July 10, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



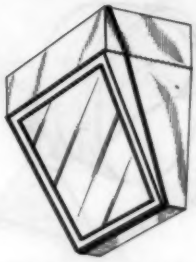
228,664
LAMP
Samuel M. Pambello, 316 Bloomfield Ave., Hoboken, N.J. 07030
Filed Sept. 15, 1971, Ser. No. 180,951
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 B



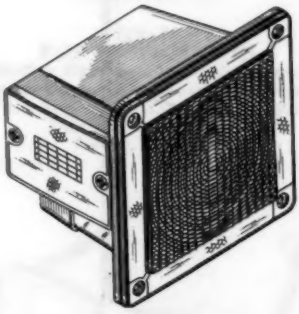
228,665
LAMP
Samuel M. Pambello, 316 Bloomfield Ave., Hoboken, N.J. 07030
Filed Sept. 15, 1971, Ser. No. 180,954
Term of patent 7 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 B

228,666
LIGHTER
Marcel Louis Michel Antoine Bich, Neuilly, France, assignor to Bic Pen Corporation, Milford, Conn.
Filed May 10, 1972, Ser. No. 252,153
Claims priority, application France Nov. 17, 1971
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

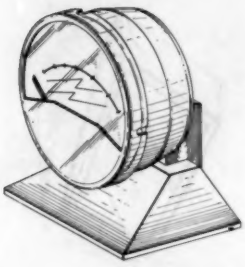
228,667
LUMINAIRE
Eldon L. Anderson, Jr., Fletcher, N.C., assignor to General Electric Company
Filed Mar. 20, 1972, Ser. No. 236,549
Term of patent 14 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—31



228,668
VEHICLE LAMP
Bernard R. Weber, Elm Grove, and David W. Wendt, Janesville, Wis., assignors to Wesbar Corporation, West Bend, Wis.
Filed Oct. 25, 1972, Ser. No. 300,503
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R

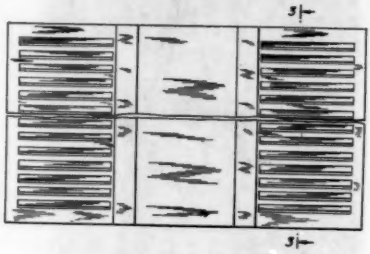


228,669
ELECTRICAL METER
Elbert K. Mackenzie, North Wales, Pa., assignor to Electro-Mechanical Instrument Co., Inc., Perkasie, Pa.
Filed Aug. 2, 1971, Ser. No. 168,536
Term of patent 7 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

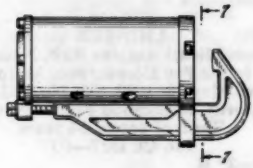


228,670
HEIGHT MEASURING SCALE
Merwin Guy Hall, Rte. 1, P.O. Box 268, Covington, La. 70433
Filed Nov. 1, 1971, Ser. No. 194,787
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 A

228,671
GRILLE
Patrick Zampetti and Robert Duechler, Cranford, N.J., assignors to Construction Specialties, Inc., Cranford, N.J.
Original design application Mar. 5, 1970, Ser. No. 21,753, now Patent No. 222,895. Divided and this application Jan. 25, 1971, Ser. No. 109,142
Term of patent 14 years
Int. Cl. D25—*02*; D23—*99*
U.S. Cl. D54—2 A



228,672
PNEUMATIC VIBRATOR FOR DETECTING RATTLES
Robert E. Barrows, Frankfort, N.Y., assignor to Chicago Pneumatic Tool Company, New York, N.Y.
Filed Nov. 9, 1971, Ser. No. 197,192
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 D



228,673
COMBINED TAILPIECE AND BRIDGE FOR A GUITAR OR SIMILAR ARTICLE
Stanley E. Rendell, Kalamazoo, Mich., assignor to Chicago Musical Instrument Co., Lincolnwood, Ill.
Filed June 22, 1971, Ser. No. 155,683
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1 A

228,674
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 22, 1972, Ser. No. 237,229
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

228,675
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Apr. 6, 1972, Ser. No. 241,896
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

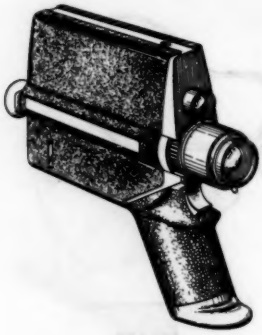
228,676
BINOCULAR
William Beecher, 2001 N. Clark St., Chicago, Ill. 60614
Filed July 10, 1972, Ser. No. 270,073
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 E

228,677
SPECTACLES
Max F. Wichers, 3636 Topeka Blvd., Topeka, Kans. 66611
Filed Aug. 21, 1972, Ser. No. 282,435
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

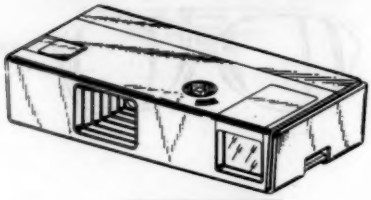
228,678
SPECTACLE FRONT
Jack Bloch, Leominster, and Vitalino Marchi, Concord, Mass., assignors to Foster Grant Co. Inc., Leominster, Mass.
Filed June 26, 1972, Ser. No. 266,006
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

228,679
PAIR OF SPECTACLES
Anthony Shindler, Brookline, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Aug. 21, 1972, Ser. No. 282,539
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

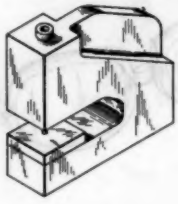
228,680
MOTION PICTURE CAMERA
James M. Conner, Mamaroneck, and James M. Ryan, New York, N.Y., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Jan. 3, 1972, Ser. No. 215,260
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 C



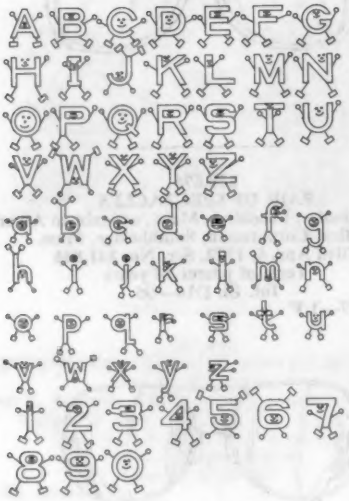
228,681
STILL CAMERA OR THE LIKE
Samuel F. Swayze, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 2, 1972, Ser. No. 277,431
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



228,682
HYDRAULIC PUNCH
James T. Gramling, Shawnee, Kans., assignor to Gramling Tool & Die, Inc., Overland Park, Kans.
Filed Dec. 16, 1971, Ser. No. 209,014
Term of patent 7 years
Int. Cl. D15—*09*
U.S. Cl. D63—1

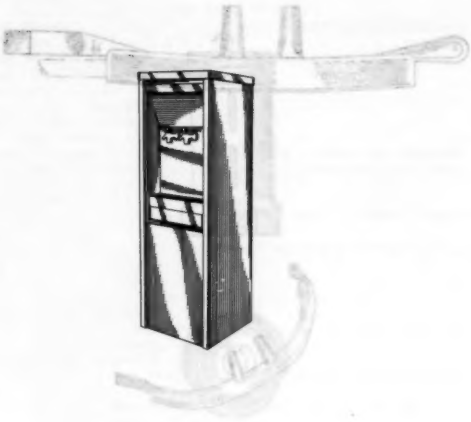


228,683
TYPE FONT
Rebecca M. Brom, 6320 15th Ave. S., Minneapolis, Minn. 55423
Filed July 29, 1971, Ser. No. 167,536
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B



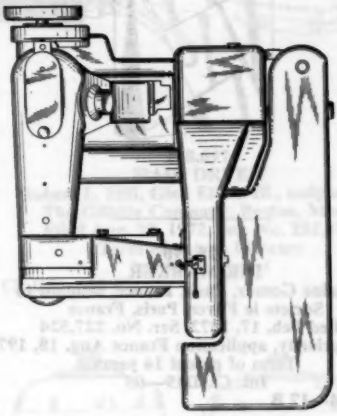
228,684
DRINKING WATER DISPENSER
Lloyd M. Cannon, Grove City, and William Taylor, Columbus, Ohio, assignors to Ebco Manufacturing Company, Columbus, Ohio
Filed May 17, 1971, Ser. No. 144,367
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D67—4

228,685
ELECTRICALLY-ACTUATED DRINKING WATER DISPENSER
Richard J. Radcliffe, Gahanna, Ohio, assignor to Ebco Manufacturing Company, Columbus, Ohio
Filed May 17, 1971, Ser. No. 144,368
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D67—4



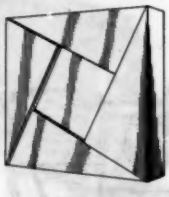
228,686
COMBINED PRESSER FOOT AND SEWING GAGE
Carmen L. Tanner, 701 Colusa Ave., El Cerrito, Calif. 94530
Filed June 7, 1971, Ser. No. 150,891
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2 B

228,687
BLIND STITCH SEWING MACHINE
Karl Schilling, New Hyde Park, N.Y., assignor to U.S. Blind Stitch Machine Corp.
Filed Jan. 20, 1972, Ser. No. 219,599
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—1



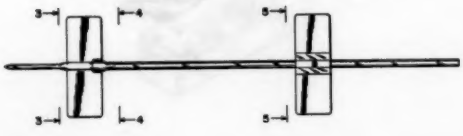
228,688
MULTI-STAGE AEROSPACE CRAFT
Hugh L. Dryden, Deputy Administrator of the National Aeronautics and Space Administration, with respect to an invention of Donald Lee Kelly, Sunland, Calif.
Filed Feb. 20, 1964, Ser. No. 78,766
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1

228,689
FRONT COVER OF A WALL CHIME
John Doggart, Macclesfield, England, assignor to V & E Friedland Limited, Macclesfield, England
Filed July 19, 1971, Ser. No. 164,183
Claims priority, application Great Britain May 14, 1971
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D72—1 B

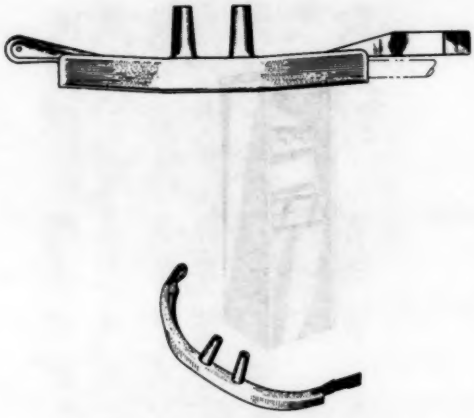


228,690
INK MARKER
Francine Gomez, Paris, France, assignor to Societe le Foyer, Paris, France
Filed Feb. 17, 1972, Ser. No. 227,324
Claims priority, application France Aug. 18, 1971
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

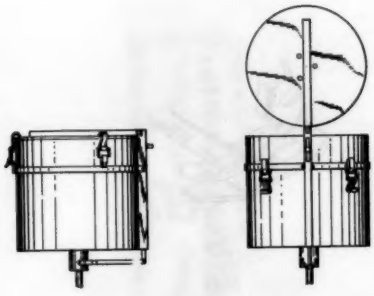
228,691
WINGED CATHETER INSERTION DEVICE
Paul M. Stocton, Dallas, Tex., assignor to Vicra Sterile, Inc., Dallas, Tex.
Filed Mar. 3, 1971, Ser. No. 120,799
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 A



228,692
NASAL CANNULA
William R. King, Denver, Colo., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Filed June 2, 1971, Ser. No. 149,408
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 G



228,693
ARTIFICIAL KIDNEY TANK
Howard G. Healy, Hollis, N.H., assignor to Medigenics Inc., Brooklyn, N.Y.
Filed June 23, 1971, Ser. No. 155,971
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



228,694
INFANT NURSER HOLDER WITH DISPOSABLE CARTRIDGE REFILL
Michael C. Ritsi, 7950 SW. 16th St., Miami, Fla. 33155
Filed Feb. 22, 1972, Ser. No. 228,460
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—8 R

228,695
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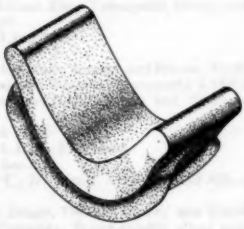
Shukradev B. Vora, 2439 Pocatello St., Rowland Heights, Calif. 91748
Filed Jan. 12, 1972, Ser. No. 217,436
Term of patent 3½ years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



228,696
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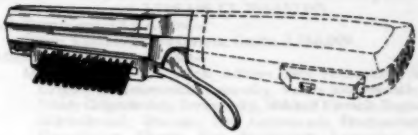
Bernard B. Bluestein, Des Plaines, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Jan. 17, 1972, Ser. No. 218,656
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



228,697
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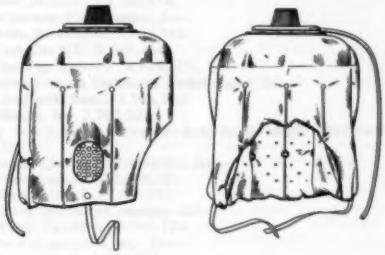
Robert L. Hill, Glen Ellyn, Ill., assignor to The Gillette Company, Boston, Mass.
Filed Aug. 22, 1972, Ser. No. 282,870
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



228,698
BLENDER
William G. Barnard, Jr., and W. Grover Barnard, Olmsted Falls, Ohio, assignors to Vita Mix Corporation
Filed Jan. 11, 1971, Ser. No. 105,777
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1 B

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF OCTOBER, 1973

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Bailleu, John R. Reuseable bolt type mounted thermocouple. 3,765,242, Cl. 73-359.000.

Bain, Joe K., to Micromedic Systems, Inc. Test tube tray feed mechanism. 3,765,255, Cl. 74-89.220.

Baird, David M., to General Motors Corporation. Ceramic integrated circuit convector assembly. 3,766,440, Cl. 317-100.000.

Bakanov, Nikolai Gavrilovich: *See—*
Shule, Edmund Khristianovich; Kutokov, Sergei Sergeevich; Rytvin, Evgeny Isaevich; Myagchenkov, Alexei Andreevich; Khodakovsky, Mikhail Davydovich; Bakanov, Nikolai Gavrilovich; Schevchenko, Nikolai Ivanovich; and Shiman, Oleg Petrovich, 3,765,852.

Baker, Kenneth A.: *See—*
Lindquist, Steven M.; Baker, Kenneth A.; Harris, Elmer E.; and Wineberg, Kenneth W., 3,765,142.

Baker, Kenneth L.; Shipley, Arthur G.; Plenge, Richard D.; and Anderson, Henry, Jr., to United States of America, Navy. Water-armed, air-safetied detonator. 3,765,332, Cl. 102-16.000.

Baker, Peter James, to M. S. E. Holdings Limited. Centrifuge. 3,765,601, Cl. 233-28.000.

Balicki, Stanley C. Armored cable-type lock assembly with special end fittings for the armored cable thereof. 3,765,196, Cl. 70-49.000.

Balini, Andrew; and Engel, Willi G., to Bell & Howell Company. Synchronized generator for a photographic film printer. 3,765,582, Cl. 226-9.000.

Ball Corporation: *See—*
Kozlowski, Joseph J., 3,765,854.

Ballard, Albert S., to Raytheon Company. Electro-optical differential. 3,766,557, Cl. 343-5.0st.

Ballou, Richard P., to General Motors Corporation. System for operating an unattended automobile engine. 3,766,398, Cl. 290-38.000.

Bandenburg, Daniel J.: *See—*
Bucy, Thomas R.; and Bandenburg, Daniel J., 3,765,669.

Barber, Walter W.; Kassees, Kamil S.; and Rushing, James M., to LTV Aerospace Corporation. Leveling system. 3,765,692, Cl. 280-6.00r.

Barber-Greene Company: *See—*
Avery, Hazelton H., 3,765,101.

Barbieux, Andre, to ELPHIAC. Apparatus for induction heating of metal sheets and process for heating such metal sheets. 3,766,353, Cl. 219-10.610.

Barbin, Robert Lloyd, to RCA Corporation. Cathode-ray tube with shadow mask having random web distribution. 3,766,419, Cl. 313-92.00b.

Barcik, Charles P.: *See—*
Guenther, Kenneth L.; and Barcik, Charles P., 3,766,341.

Barnard, John C. Cooling systems for internal combustion engines. 3,765,384, Cl. 123-41.320.

Barnes, Ralph W., Jr.: *See—*
Toole, James F.; Barnes, Ralph W., Jr.; and Janeway, Richard, 3,765,406.

Bartl, Ronald W.; and Fulton, George G., to Marine Construction & Design Co. Line hauling and coiling apparatus. 3,765,614, Cl. 242-47.000.

BASF Wyandotte Corporation: *See—*
Fuller, Edward H., 3,765,530.
Patton, John T., Jr.; Cenker, Moses; and Kan, Peter T., 3,766,103.

Batz, James E., to Northern Illinois Gas Company. Analog-to-digital converter employing electrostatic signal coupling apparatus. 3,766,544, Cl. 340-347.00p.

Batzer, Hans; Nikles, Erwin; Ernst, Otto; and Porret, Daniel, to Ciba-Geigy AG. Epoxidized hydroaromatic acetals. 3,766,211, Cl. 260-340.900.

Bauer, Adolf; Weber, Karl Heinz; and Pook, Karl-Heinz, to Boehringer Ingelheim G.m.b.H. Process for the preparation of 3-aminomethylidene-1,5-benzodiazepine-2,4-(3H,5H)-diones. 3,766,169, Cl. 260-239.30b.

Bauer Bros. Co., The: *See—*
Steiniger, Herman W., 3,765,611.
Steiniger, Herman W., 3,765,613.

Bauer, Sigrid; Brahm, Richard; and Dietrich, Roland, to Kalle Aktiengesellschaft. Photopolymerizable copying composition and copying material produced therewith. 3,765,898, Cl. 96-115.00p.

Bauknecht, Otto; and Horl, Adolf, to Zahnradfabrik Friedricheshafen Aktiengesellschaft. Die roll apparatus for internal gears. 3,765,202, Cl. 72-94.000.

Baumann, Horst: *See—*
Plapper, Jurgen; Stein, Werner; and Baumann, Horst, 3,765,833.

Baurle, Horst, to Bosch, Robert, G.m.b.H. Continuously variable hydrostatic transmission. 3,765,183, Cl. 60-491.000.

Bausch & Lomb Incorporated: *See—*
Yzerman, Henk, 3,765,094.

Bayer Aktiengesellschaft: *See—*
Holtschmidt, Hans; Gold, Heinrich; and Oertel, Gunther, 3,766,217.
Klauke, Erich; and Holtschmidt, Hans, 3,766,273.
Metzner, Wolfgang; Rudolph, Hans; Fuhr, Karl; and Schnell, Hermann, 3,766,111.
Waldmann, Helmut; Scherdtel, Wulf; and Swodenk, Wolfgang, 3,766,212.
Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, 3,766,243.

Bayer Rickman GmbH: *See—*
Kyri, Hans; Reiss, Albert; and Suss, Josef, 3,765,931.

Bazzell, John S.: *See—*
Nettles, Henry D.; and Bazzell, John S., 3,765,442.

Beam, Jon W. Smoking pipe and preformed charge combination. 3,765,428, Cl. 131-196.000.

Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; and Ulimer, Richard J., to International Business Machines Corporation. Data recorder and verifier. 3,765,603, Cl. 234-34.000.

Bean, Kenneth E.: *See—*
Pankratz, John M.; and Bean, Kenneth E., 3,765,747.

Bearson, Benhard M.; and Klingtvedt, Orrin C. Adjustable basketball goals. 3,765,676, Cl. 273-1.50r.

Beatrice Foods Co.: *See—*
Kasik, Robert L.; and Ludsas, Anthony J., 3,765,905.

Beausoleil, William F.; and Phelps, Byron E., to International Business Machines Corporation. Shift register storage unit with multi-dimensional dynamic ordering. 3,766,534, Cl. 340-172.500.

Beck Carton Corporation: *See—*
Hardy, Albert H., Sr., 3,765,531.

Beck, James R., to Lilly, Eli, and Company. 3-(1,3-Dialkoxy-, and 1-hydroxy-3-alkoxy-9-oxo-4-acridanyl) propionates as intermediates for acronycine and related compounds. 3,766,187, Cl. 260-279.00r.

Beck, Ronald A., to Sperry Rand Corporation. Method of forming keepered word line plated wire memory array. 3,765,081, Cl. 29-604.000.

Beckenbach, Karl. Inclined hearth kiln for the firing and sintering of material. 3,765,827, Cl. 432-95.000.

Becker, Harold S.: *See—*
Gordon, Theodore J.; and Becker, Harold S., 3,766,541.

Becker, Wilhelm, to Reichhold-Albert-Chemie Aktiengesellschaft. Process for the manufacture of glycidyl ethers. 3,766,221, Cl. 260-348.600.

Beckman Instruments, Inc.: *See—*
Paulson, Gerald L.; and Ray, Robert A., 3,765,841.

Bedell, Stanley F., to Polaroid Corporation. Neutralizing layer for color diffusion transfer film. 3,765,885, Cl. 96-3.000.

Bedin, Jean Emile. Multiple bottling and labelling machines. 3,765,460, Cl. 141-98.000.

Beermann, Claus: *See—*
Schmidt, Erwin; and Beermann, Claus, 3,766,252.

Behl, Betty A. Process for plating aluminum alloys with manganese. 3,765,847, Cl. 29-197.000.

Belaco Inc.: *See—*
Stempel, Edward H., 3,765,634.

Bell & Howell Company: *See—*
Balini, Andrew; and Engel, Willi G., 3,765,582.

Bell & Howell Japan, Ltd.: *See—*
Tadao, Isono, 3,765,767.

Bell, Sam S. Cigar ash catcher. 3,765,427, Cl. 131-178.000.

Bell Telephone Laboratories, Incorporated: *See—*
Aaron, Marvin Robert; Kaneko, Hisashi; and Osborne, Paul Wray, 3,766,546.
Biagetti, Richard Victor, 3,765,943.
Butherus, Alexander Duane, 3,765,949.
Kohn, Roger Louis, 3,766,488.
Kragness, Roger Clyde; and Waggener, Herbert Atkin, 3,765,969.
La Macchia, John Thomas, 3,765,749.
Mar, Jerry, 3,765,961.
Morris, Robert Charles; Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., 3,766,484.
Rand, Myron Joel; and Schmidt, Paul Felix, 3,765,935.

Rosenberg, Robert; and Runge, Peter Klaus, 3,766,489.
Smith, Peter William, 3,766,491.

Belloc, Jacques; Choquet, Michel Francois; and Pierre, Jean Marc, to International Business Machines Corporation. Device for recovering a frequency showing phase jitter. 3,766,480, Cl. 325-320.000.

Bender-Christensen, Bent, to Hempel's J. C., Skibsfarve-Fabrik A/S. Process and composition for blast-cleaning and corrosion-protecting metal surfaces. 3,765,923, Cl. 117-26.000.

Bendix Corporation, The: *See—*
Fallon, Herbert J., 3,765,524.
Loudon, Donald C.; and Bernhardt, Herman E., 3,765,390.
Rachel, Todd L.; Horn, John W.; and Wertheimer, Harry P., 3,765,380.
Tresselt, Carl P., 3,766,554.

Benedict, Howard N.: *See—*
DePablo, Raul S.; and Benedict, Howard N., 3,766,089.

Bennett, Jean M.: *See—*
Ashley, Edmond J.; Decker, Donald L.; and Bennett, Jean M., 3,765,746.

Bentle, Ralph W. Corner control system for plaster walls. 3,765,138, Cl. 52-255.000.

Beole, Rainer: *See—*
Dzimoba, Willy; Beole, Rainer; Wolf, Gerhard; and Dreyer, Gunter, 3,765,436.

Berendt, Hans Ulrich: *See—*
Mueller, Volkmar; Berendt, Hans Ulrich; and Harris, Allschwil, 3,765,839.

Berens, James J. Phostmetic nail. 3,765,410, Cl. 128-81.00a.

Beresic, John I. Hat embodying means for containing small accessories. 3,765,031, Cl. 2-185.00r.

Berezovsky, Mikhail Elevich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiselevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.

Bergh, Emil M.: *See—*
Heffan, Howard; Bergh, Emil M.; Mauch, John W.; and Sawick, Walter J., 3,766,387.

Bergkvist, Bengt, to U.S. Philips Corporation. Device in a search radar equipment. 3,766,553, Cl. 343-7.700.

Bergman, Lawrence A.: *See—*
Herbst, Paul T.; and Bergman, Lawrence A., 3,765,631.

Bergner, Richard: *See—*
Wollner, Josef, 3,765,204.

Bergwerksverband GmbH: *See—*
Juntgen, Harald; and Knoblauch, Karl, 3,766,090.

Berkey Photo, Inc.: *See—*
Faris, Edwin E.; and Kopala, Richard, 3,765,313.

Berkley & Company, Inc.: *See—*
Johnson, Paul C.; Lilland, Larry L.; and Siemon, Earl L., 3,765,618.

Berkovits, Barouh V., to American Optical Corporation. Rate discrimination circuit. 3,766,413, Cl. 307-294.000.

Berndt, Heinz: *See—*
Meyer-Stoll, Hans Albrecht; and Berndt, Heinz, 3,766,100.

Berney, Jean-Claude, to Compagnie des Montres Longines, Francillon S.A. and Golay, Bernard. Electronic timepiece. 3,766,454, Cl. 318-128.000.

Bernhardt, Daniel. Heat sealed food container. 3,765,595, Cl. 229-43.000.

Bernhardt, Herman E.: *See—*
Loudon, Donald C.; and Bernhardt, Herman E., 3,765,390.

Berthier, Rene-Marie. Process for making noncorrosive cement with controlled setting time. 3,765,916, Cl. 106-102.000.

Bethea, Thomas J.; and Ritchie, Joe L., to Celanese Corporation. Mechanized bobbin handler. 3,765,160, Cl. 57-53.000.

Bethlehem Corporation, The: *See—*
Root, William L., 3,765,481.

Bethlehem Steel Corporation: *See—*
Shah, Dipak C.; Ward, George W.; and Whiteley, Roger L., 3,765,206.

Bey, Michael P.: *See—*
Bey, Paul P.; and Bey, Michael P., 3,765,778.

Bey, Paul P.; and Bey, Michael P. Digital optical density for measuring the difference in optical density between an absorber of known density and a sample absorber. 3,765,778, Cl. 356-202.000.

Biagetti, Richard Victor, to Bell Telephone Laboratories, Incorporated. Fabrication of lead-acid batteries. 3,765,943, Cl. 136-27.000.

Bialous, Charles A.; and Jaquiss, Donald B. G., to General Electric Company. Thermal oxidatively stable polycarbonate composition. 3,766,139, Cl. 260-47.0xa.

Bierwith, Stanton F., to Great Canadian Oil Sands, Limited. Method of manufacturing laminated teeth for bucketwheel excavator using electroslag coating. 3,766,354, Cl. 219-77.000.

Bigley, James E.; and Edgell, James E., to Disston, Inc. Safety lock mechanism for monentary slide switch. 3,766,352, Cl. 200-169.00r.

Bila Cup AB: *See—*
Persson, Karl Rune, 3,765,564.

Bimer, Russel M.; and Schuldt, Paul H., to Diamond Shamrock Corporation. Polychloro derivatives of dicarboxy pyridines. 3,766,195, Cl. 260-295.00r.

Binasik, Chester S.; Hudson, Daniel H.; and Voorheis, Temple S., to Coen Company. Combustion chamber burner throat construction. 3,765,345, Cl. 110-1.00a.

Bio-Medical Sciences Inc.: *See—*
Pickett, Charles G.; and Chauha, Desh D., 3,765,243.

Biospectrum, Incorporated: *See—*
Eddleman, Roy T.; and Schmitz, Richard L., 3,766,360.

Birdwell, Venson E., Sr. Expansible reservoir unit for liquid cooled engines. 3,765,383, Cl. 123-41.500.

Birsch, Arthur E.: *See—*
Ommaya, Ayub; and Birsch, Arthur E., 3,765,412.

Bishop, Arthur L. Apparatus for making valve sleeves. 3,765,305, Cl. 90-24.00r.

Bissell, Robert D., to Dresser Industries, Inc. Gauge casing construction. 3,765,249, Cl. 73-431.000.

Black, John C.; Krewson, Neil N.; Tait, John B.; and Updike, Bruce M., to International Business Machines Corporation. Processor utilizing one holographic array and a plurality of photoresponsive storage arrays for high paging performance. 3,766,533, Cl. 30-172.500.

Blackburn, Tom L.; and Wisotzky, Otto G., to GTE Automatic Electric Laboratories, Incorporated. Technique for deriving a regulated D-C source for low-level logic circuits from a high D-C voltage source. 3,766,414, Cl. 307-297.000.

Blackford, Edward A., Jr., to Sinclair-Koppers Company. Latex for high gloss floor polish formulations. 3,766,112, Cl. 260-28.50r.

Blackford, Edward A., Jr., to Sinclair-Koppers Company. Fire-retardant latex containing chlorinated paraffin wax. 3,766,189, Cl. 260-285.00b.

Blackmer, David E.; and Boling, Eldon A., to Instrumentation Laboratory, Inc. Calorimetry. 3,765,237, Cl. 73-190.00r.

Blackwell, John; and Cole, John Elton, Jr., to Du Pont de Nemours, E. I., and Company. Navy blue phenyl-azo-naphthyl-azo-m-toluidine dyes. 3,766,163, Cl. 260-191.000.

Blair, James E.; and Saholt, Orville J., to United States of America, Navy. Target discriminating device. 3,765,335, Cl. 102-62.000.

Blake, William R. Non-lethal riot deterrent weapon. 3,765,114, Cl. 42-1.00f.

Blankenhorn, Charles F.; and Felmann, Ted S., to Shell Oil Company. Bactericidal mixture of sulfite salt and surfactant quaternary ammonium salt. 3,766,063, Cl. 252-8.55d.

Blaupunkt-Werke GmbH: *See—*
Riechmann, Werner, 3,766,314.

Bliss, E. W., Company: *See—*
Vandemore, James J.; and Henry, Donald E., 3,766,550.

Block, Aleck, to Merit Abrasive Products, Inc. Mounting for abrasive disc. 3,765,130, Cl. 51-378.000.

Blomberg, Maurits C., to North American Rockwell Corporation. Actuator mechanism for the folder of a printing press or the like. 3,765,671, Cl. 270-71.000.

Blood, Alden E.: *See—*
Albers, Kenneth H.; Snapp, Thomas C., Jr.; and Blood, Alden E., 3,766,118.
Snapp, Thomas C., Jr.; Blood, Alden E.; and Albers, Kenneth H., 3,766,119.
Snapp, Thomas C., Jr.; and Blood, Alden E., 3,766,179.

Blose, Werner, to Weill & Reineke G.m.b.H. Process for manufacturing large sheets of thermoplastic material from extruded strips joined together along their edges. 3,765,982, Cl. 156-244.000.

Blumcraft of Pittsburgh: *See—*
Horgan, William J., Jr., 3,765,198.

Board, Robert D.: *See—*
Kruger, William P.; Turner, Wilson R.; and Board, Robert D., 3,766,396.

Bobard, Emile. Hydraulic jack arrangement for the steering mechanism of a vehicle. 3,765,697, Cl. 280-95.00r.

Boehmer, Friedhelm, to Kocks, Friedrich, Firma. Entry guides. 3,765,214, Cl. 72-252.000.

Boehringer Ingelheim G.m.b.H.: *See—*
Bauer, Adolf; Weber, Karl Heinz; and Pook, Karl-Heinz, 3,766,169.
Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; and Reichl, Richard, 3,766,170.

Boeing Company, The: *See—*
Burnie, Robert T.; Clarke, David W.; and Hamilton, Wilson S., 3,766,123.
Pease, George E.; and Pettersen, Egil R., 3,765,708.

Bogachenko, Alexey Georgievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Ebedev, Vladimir Konstantinovich; Baglay, Vitaly Michailovich; Bondarenko, Oleg Petrovich; Sidorenko, Michail Nikolaevich; and Bogachenko, Alexey Georgievich, 3,765,471.

Bogart, Marcel J. P.; Nielsen, Adners; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, to Haldor Frederik Axel Topsoe and Fluor Corporation. Conversion of hydrocarbons. 3,766,278, Cl. 260-683.00r.

Bogen, Wolfgang, GmbH, Firma: *See—*
Seehawer, Eberhard M., 3,765,083.

Boggs, Jesse K.; and Langer, Arthur W., Jr., to Esso Research and Engineering Company. Synthetic oils. 3,766,285, Cl. 260-668.00r.

Bohm, Wolfgang; and Wolf, Helmut, to Kraftwerk Union Aktiengesellschaft. Method of measuring intrinsic stresses in structural

components of machines and apparatus and devices for performing such method. 3,765,230, Cl. 73-88.00r.

Boise Cascade: *See—*
McGregor, John C., 3,765,695.

Bole, Hamilton B.; and Chace, Howard E., to American Optical Corporation. Apparatus for heat treating lenses. 3,765,861, Cl. 65-162.000.

Boling, Eldon A.: *See—*
Blackmer, David E.; and Boling, Eldon A., 3,765,237.

Bolk, Willem Thomas, to Nederlandse Optiek-en Instrumentenfabriek Dr. C.E. Bleeker N.V. Calibrating voltage generator. 3,766,401, Cl. 307-43.000.

Boll, Harry Joseph. Sensory substitution system. 3,766,311, Cl. 178-6.000.

Bollyky, Joseph, to Pollution Control Industries, Inc. Liquid cooled ozone generator. 3,766,051, Cl. 204-321.000.

Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,765,491.

Bomar, Edward S.: *See—*
Tennery, Victor J.; Godfrey, Thomas G.; and Bomar, Edward S., 3,766,082.

Bonazoli, Robert P.; and Cosco, Robert J., to GTE Sylvania Incorporated. Xenon flash tube with internal reflector. 3,766,421, Cl. 313-113.000.

Bondarenko, Oleg Petrovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Ebedev, Vladimir Konstantinovich; Baglay, Vitaly Michailovich; Bondarenko, Oleg Petrovich; Sidorenko, Michail Nikolaevich; and Bogachenko, Alexey Georgievich, 3,765,471.

Bonin, Yves; and Gigou, Claude, to Rhone-Poulenc S.A. Non-thrombogenic polymers containing quaternary ammonium groups to which molecules of heparin are bonded. 3,766,104, Cl. 260-9.000.

Boot, Roy Desmond: *See—*
Maynard, Harry; and Boot, Roy Desmond, 3,765,626.

Booth, John. Flush-through port device. 3,765,364, Cl. 114-198.000.

Bordovsky, Michael Joseph; and Woller, William Henry, to Warner-Lambert Company. Process for the purification of coal tar. 3,766,052, Cl. 208-45.000.

Borg-Warner Corporation: *See—*
Dever, James L.; and Hodan, James J., 3,766,303.

Borgs Fabriks AB: *See—*
Myhr, Lars Halvar; and Svensson, Lars-Ake Erling, 3,765,625.

Borner, Alfred. Appliance for cutting fruits. 3,765,287, Cl. 83-407.000.

Bornhorst, Kenneth F.; Monroe, Jack L.; Culbertson, Alvin E.; Thomas, David E.; and Drake, Donald E., to National Cash Register Company, The. Radio receiving apparatus for locating a plurality of target transmitters. 3,766,560, Cl. 343-118.000.

Bosch, Gerrit, to U.S. Philips Corporation. Semiconductor device having an integrated thermocouple. 3,766,444, Cl. 317-234.00r.

Bosch, Robert, Elektronik G.m.b.H.: *See—*
Dillenberger, Karl, 3,766,499.

Bosch, Robert, G.m.b.H.: *See—*
Baurle, Horst, 3,765,183.
Kanpp, Heinrich, 3,765,387.
Schenk, Josef; Von Ehrenstein, Christian; and Moreira, Luiz Carlos, 3,766,453.
Schnaibel, Eberhard; Fleischer, Helmut; Schonart, Edgar; and Adler, Karl-Heinz, 3,766,485.
Scholpp, Martin, 3,765,881.

Boss, David W.; Kemlage, Bernard M.; Lyons, Vincent J.; and Pogge, Hans B., to International Business Machines Corporation. Method for minimizing autodoping in epitaxial deposition. 3,765,960, Cl. 148-175.000.

Bouhou, Andre: *See—*
Serrano, Antonio Escolano; and Bouhou, Andre, 3,765,540.

Bourdon, Louis: *See—*
Lehureau, Jean; and Bourdon, Louis, 3,765,933.

Bourgain, Louis; Dreyfus, Gaspard; Le Nabour, Marcel; and Rouquie, Georges. Bearing device for a rotating shaft. 3,765,735, Cl. 308-140.000.

Bourquardez, Gaston; and Coffy, Rene Louis, to Societe Nationale Industrielle Aerospatiale. Connecting element between two members enabling them to rotate in relation to one another in three axes. 3,765,267, Cl. 74-581.000.

Bowen, Willard L. Method of forming a roller bearing of superior runout characteristics. 3,765,071, Cl. 29-148.40a.

Bowler, Lauren L.; Salamon, Theodore M.; and Winchell, Frank J., to General Motors Corporation. Vehicle occupant restraining belt system. 3,765,701, Cl. 280-150.0sb.

Bowman, E. W., Incorporated: *See—*
Bowman, Edward W., 3,765,856.

Bowman, Edward W., to Bowman, E. W., Incorporated. Glassware assembling and lehr loading mechanism. 3,765,856, Cl. 65-60.000.

Bowman, Thomas C.: *See—*
Watson, Stewart C.; and Bowman, Thomas C., 3,765,784.

Boyle, Edwin C. Support platform and package incorporating same. 3,765,539, Cl. 211-59.000.

Bradshaw, Bobbie G.; and Graves, Howard T., to United States of America, Army. Automatic personnel intrusion alarm. 3,766,539, Cl. 340-258.00d.

Brady, Sam A.; Clark, Joseph N.; Crossan, Irvin D.; and Toporcer, Louis H., to Dow Corning Corporation. Silicone elastomer composition containing amidosilane and aminosilane. 3,766,128, Cl. 260-37.0sb.

Bragin, Alexandr Sergeevich: *See—*
Gilev, Vitaly Konstantinovich; Bragin, Alexandr Sergeevich; Sarkisov, Rafael Tevosovich; and Stephanian, Ernst Arakelovich, 3,765,150.

Brahm, Richard: *See—*
Bauer, Sigrid; Brahm, Richard; and Dietrich, Roland, 3,765,898.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. 4,4-Methylene di(cyclohexylamine) isomerization over a supported catalyst. 3,766,272, Cl. 260-563.00b.

Bram, Georges Eugene, to Societe des Fonderies de Pont-A-Mousson. Joint for tubular elements. 3,765,706, Cl. 285-231.000.

Brammall, Inc.: *See—*
Van Gompel, James J., 3,765,716.

Brandon, Clarence W., 50% to Brandon, Orpha B., 50% to Hardin, N. A., Newton, Catherine H. and Wright, Hazel H. Apparatus for producing variable high frequency vibrations in a liquid medium. 3,765,804, Cl. 417-540.000.

Brandon, Orpha B.: *See—*
Brandon, Clarence W., 3,765,804.

Brandt, Edmund D., to Western Electric Company, Incorporated. Printed circuit board and a method of repairing contacts on a printed circuit board. 3,765,076, Cl. 29-401.000.

Branson Instruments, Incorporated: *See—*
Kramer, George C., 3,765,973.

Bras S.p.A.: *See—*
Rimini, Tito, 3,765,569.

Brasher, James A.: *See—*
Cummins, Billy H.; Ashton, William B.; Brasher, James A.; and Askew, John D., Jr., 3,766,055.

Braude, Basil. Property investment board game apparatus. 3,765,682, Cl. 273-134.0af.

Bravencec, Frank R. Calibrated densitometer accommodating various color tones. 3,765,776, Cl. 356-189.000.

Breazeale, Jack D.: *See—*
MacLaren, Richard O.; and Breazeale, Jack D., 3,765,174.

Brecher, Charles, to GTE Laboratories, Incorporated. Flash lamp. 3,765,821, Cl. 431-93.000.

Breeden, William J.: *See—*
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Brenden, Byron B., to Holotron Corporation. Ultrasonic imaging techniques and mammograph equipment. 3,765,403, Cl. 128-24.000.

Brent, George. Motor fuel composition. 3,765,848, Cl. 44-51.000.

Breslow, David S., to Hercules Incorporated. Azides. 3,766,216, Cl. 260-349.000.

Brewer, Richard G.; and Shoemaker, Richard L., to International Business Machines Corporation. Method and apparatus for producing electromagnetic transient coherent effects. 3,766,498, Cl. 332-7.510.

Brey, Wilhelm, to Intercole Automation Inc. Tire building apparatus. 3,765,986, Cl. 156-400.000.

Brey, Wilhelm, to Intercole Automation, Inc. Tire building apparatus. 3,765,987, Cl. 156-415.000.

Bridgestone Cycle Industry Co., Ltd.: *See—*
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Brieske, Bernard F., to Vision Wrap Industries, Inc. Article carrying bag and method for its production. 3,765,597, Cl. 229-62.000.

Briley, Joseph C., to Sanders Associates, Inc. Program control apparatus. 3,766,527, Cl. 340-172.500.

Brink, Walter A.; and Hanley, Thomas G., to Eastman Kodak Company. Method and apparatus for severing a web to terminate one roll and initiate winding a new roll. 3,765,615, Cl. 242-56.00r.

British Aircraft Corporation: *See—*
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British Iron and Steel Research Association: *See—*
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British Oxygen Company Limited, The: *See—*
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Broad, Michall John: *See—*
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Brocker, John R.; Chapman, Ronald H.; Jacobs, Paul; Johnson, Ronald C.; Powell, Jerry R.; and Peay, Robert L., to Motorola, Inc. Sequential tone signalling system. 3,766,523, Cl. 340-171.0pf.

Brockway Glass Company, Inc.: *See—*
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Brokl, Milan: *See—*
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Bronca, Gaston; Lefrancois, Christian; Hlasnik, Ivan; and Pouillange, Jean-Paul, to Commissariat a l'Energie Atomique. Cooling device for superconducting coils. 3,766,502, Cl. 335-216.000.

Brooks, Frank W., to General Motors Corporation. Brake actuating and adjusting mechanism. 3,765,512, Cl. 188-71.800.

Brooks, Frank W., to General Motors Corporation. Brake actuating and adjusting mechanism. 3,765,513, Cl. 188-77.900.

Brooks, Joseph F.; and Schaefer, Harold W., to National Union Electric Corporation. Control switch arrangement for an upright vacuum cleaner. 3,766,347, Cl. 200-157.000.

Bross, Theodore D., Line Construction Corporation, The: *See*—
MacFarlane, John, 3,766,537.

Brothers, Jack, to United States of America, Army. Arming and unarming device. 3,765,340, Cl. 102-79.000.

Brouillette, Carl V., to United States of America, Navy. Magnetically pigmented paint. 3,766,074, Cl. 252-62.540.

Broussard, Leo P.: *See*—
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Brown & Williamson Tobacco Corporation: *See*—
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Brown, Houston Alfred, Jr.; Keilen, Donald H.; and Ifune, Saburo, to International Telephone and Telegraph Corporation. Radiant energy receivers. 3,766,482, Cl. 325-419.000.

Brown, Hugh O. Dispenser. 3,765,415, Cl. 128-261.000.

Brown, Omar L.: *See*—
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Brown, Russell R. Compressed air engine. 3,765,180, Cl. 60-370.000.

Browning Industries, Inc.: *See*—
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Browning, Val A., to Browning Industries, Inc. Barrel ring and associated structure for autoloading firearms. 3,765,302, Cl. 89-193.000.

Bruchez, Jeffrey Alan, to Ferranti Limited. Transistors. 3,766,449, Cl. 317-235.00r.

Bruderer AG: *See*—
Portmann, August Thomas, 3,765,266.

Bruhn, Max R. C., Jr., to Grand Haven Stamped Products Company. Adjustable linkage. 3,765,264, Cl. 74-512.000.

Brusa, Ugo. Ingotting machine. 3,765,473, Cl. 164-325.000.

Bryant, Richard W.; and Tu, George K., to Cogar Corporation. ECL-to-TTL converter. 3,766,406, Cl. 307-203.000.

Brzezinski, Janusz. Digital readout instrument employing transducer and double D.C. power supply. 3,765,244, Cl. 73-362.0ar.

Buchanan, James A., to United States of America, Atomic Energy Commission. Multi-microprogrammed input-output processor. 3,766,526, Cl. 340-172.500.

Buchholz, James J.; and Peyton, Edward D. Dual recording and reproducing apparatus having two endless tapes and common drive means. 3,766,326, Cl. 179-100.0rf.

Bucourt, Robert: *See*—
Nedelec, Lucien; and Bucourt, Robert, 3,766,248.

Bucy, Thomas R.; and Bandenburg, Daniel J., to OK Partnership. Document coder. 3,765,669, Cl. 269-254.00r.

Budin, Jean-Pierre; and Roger, Georges, to Compagnie Generale d'Electricite. Optical device for simultaneously measuring the distance and speed of a moving object with respect to a reference. 3,765,768, Cl. 356-28.000.

Budnik, Roger J.: *See*—
Montgomery, Harold S.; and Budnik, Roger J., 3,765,105.

Budrys, Ignas; Lee, Ernest O., Jr.; and Pharis, William W., to Stromberg-Carlson Corporation. Auxiliary switching system controlled by regular telephone switching system. 3,766,324, Cl. 179-18.00e.

Bullough, Vaughn Lynn, to Reynolds Metals Company. Aluminum-silicon alloying process. 3,765,878, Cl. 75-148.000.

Bunger, Heinrich; and Renckhoff, Gustav, to Dynamit Nobel Aktiengesellschaft. Hydrolysis-resistant acetoglycerides which are solid at room temperature. 3,766,227, Cl. 260-410.800.

Burboeck, Hans Peter, to Zeiss-Stiftung, Carl. Microscope stage. 3,765,745, Cl. 350-90.000.

Burell Bros., Inc.: *See*—
Burrell, Wayne R.; and Burrell, Richard P., 3,765,635.

Burger, William H., to Kimberly-Clark Corporation. Method and apparatus for crosslaying web materials. 3,765,989, Cl. 156-441.000.

Burgess, Colin D.: *See*—
Raffensparger, Samuel L.; Burgess, Colin D.; and Crawford, J. B., 3,765,993.

Burke, Ambrose D. Double voice coil loudspeaker. 3,766,334, Cl. 179-115.5dv.

Burkey, Lee C., to North American Rockwell Corporation. Lapping machine. 3,765,128, Cl. 51-73.00r.

Burlington Industries, Inc.: *See*—
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Burnie, Robert T.; Clarke, David W.; and Hamilton, Wilson S., to Boeing Company, The. Method of rendering hydrophobic the surface of a transparent sheet and surface-conditioning composition therefor. 3,766,123, Cl. 260-324.000.

Burns, Robert J., Jr. Liquid dispenser. 3,765,577, Cl. 222-501.000.

Burns, Robert W., to General Cable Corporation. Apparatus for assembling a component of parts comprising terminations, conductor leads and enclosures. 3,765,073, Cl. 29-203.00d.

Burnsweig, Joseph, Jr.; and Heimiller, Robert C., to Hughes Aircraft Company. High power, broad bandwidth modulator of RF energy. 3,766,551, Cl. 343-5.0dp.

Burpee, Charles D.: *See*—
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Burpee, Lee E.; Burpee, Charles D.; and Paynter, Donald A. Instrumented token. 3,766,452, Cl. 317-262.00r.

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Burrell Bros., Inc.: *See*—
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Burrell, Frank C., to General Motors Corporation. Vehicle steering system. 3,765,698, Cl. 280-96.200.

Burrell, Richard P.: *See*—
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Burrell, Wayne R.; and Burrell, Richard P., 3,765,636.

Burrell, Wayne R.; and Burrell, Richard P., to Burrell Bros., Inc. Bracket for gas containers and similar tanks. 3,765,635, Cl. 248-313.000.

Burrell, Wayne R.; and Burrell, Richard P., to Burrell Bros., Inc. Vise for gas containers and similar tanks. 3,765,636, Cl. 248-313.000.

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Burton, Charles A., to Rimrock Corporation. Article forming machine and extractor. 3,765,474, Cl. 164-344.000.

Burvee, Alfred B. Automatic steering system. 3,765,501, Cl. 180-79.20r.

Buscher, Richard G.; Davis, Richard L.; Kazmarek, Edward; and Larsen, Richard K., to Lear Siegler, Inc. Mechanical linkage system. 3,765,263, Cl. 74-491.000.

Bush, Walter Monroe; and Gates, John Warburton, Jr., to Eastman Kodak Company. Image transfer systems with onium indophenoxide image dyes. 3,765,886, Cl. 96-3.000.

Bushick, Ronald D.: *See*—
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Butcher, Wade E., Jr.; and Sims, Robert J., to Harris-Intertype Corporation, mesne. Adaptive processor for an RF antenna. 3,766,559, Cl. 343-100.0sa.

Butherus, Alexander Duane, to Bell Telephone Laboratories, Incorporated. Solid electrolyte batteries and methods for their production. 3,765,949, Cl. 136-153.000.

Butter, Charles D., to Honeywell Inc. Acousto-optic device. 3,765,750, Cl. 350-161.000.

Cake, Arthur Fischer: *See*—
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Calzolari, Pietro; and Longoni, Sergio, to Industrie Pirelli S.p.A. Electric cable with corrugated metallic sheath. 3,766,309, Cl. 174-102.00d.

Cameli, Nazzareno: *See*—
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Cameron, Frank L., to Westinghouse Electric Corporation. High voltage current limiting fuse. 3,766,509, Cl. 337-279.000.

Cameron, Ronald E. Educational and game device. 3,765,107, Cl. 35-35.00h.

Campbell, Billy H.: *See*—
Smith, Arthur A.; Christensen, Dean E.; Campbell, Billy H.; Strickland, Raymond I.; Lopez, Bennie F.; Eckstein, Herbert P.; and Litchfield, Hart S., 3,765,752.

Campbell, John; Freeman, Roger Francis Argyll; and Williams, Gwilym Iorwerth. Apparatus for the determination of surface tension of liquids. 3,765,227, Cl. 73-64.400.

Canon Kabushiki Kaisha: *See*—
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Takishima, Yoshiyuki, 3,765,312.

Canter, James A., to General Motors Corporation. Timer circuit-automotive compressor. 3,765,191, Cl. 62-228.000.

Caporiccio, Gerardo; and Strepparola, Ezio, to Montecatini Edison S.p.A. Acrylic and methacrylic monomers. 3,766,251, Cl. 260-486.00h.

Caprio, Lawrence A.: *See*—
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Carbonaro, Antonio; Greco, Alberto; Dall Asta, Gino; and Cameli, Nazzareno, to Goodrich, B. F., Company, The. 3-Ethylidene tricyclo [4.2.1.$0^{2,5}$]non-7-ene. 3,766,284, Cl. 260-666.0py.

Carborundum Company, The: *See*—
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Carl, Christopher: *See*—
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Carlson, Cleo Dale, to Dow Chemical Company, The. Process for the preparation of ethylbenzene. 3,766,290, Cl. 260-672.00t.

Carlson, David John; and George, John Barrett, to RCA Corporation. Circuit for transmitting digital signals to conventional television receiver. 3,766,313, Cl. 178-7.200.

Carlson, Elmer Victor; and Mostardo, August, Jr., to Industrial Research Products, Inc. Electroacoustic transducer. 3,766,332, Cl. 179-114.00a.

Carlson, Ronald J.: *See—*
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Carow, Donald W. Rotating electrical machine. 3,766,456, Cl. 318-138.000.
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Carrier Corporation: *See—*
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Carter, Walter H.: *See—*
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Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., to International Business Machines Corporation. Multiple B-adjacent group error correction and detection codes and self-checking translators therefor. 3,766,521, Cl. 340-146.1al.
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Caudill, Clarence D. J., to Littiken, Darrell E. Musical instrument stand. 3,765,633, Cl. 248-229.000.
Caunt, Anthony David, to Imperial Chemical Industries Limited. Polymerization process. 3,766,160, Cl. 260-93.700.
Celada, Juan; Villarreal, David; and MacKay, Patrick W., to Fierro Esponja S.A. Method and apparatus for the gaseous reduction of iron ore to sponge iron. 3,765,872, Cl. 75-34.000.
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Duey, Clarence J.; Prinz, Roy H.; and Ramey, James M., 3,766,277.
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Chen, Chin Shu. Folding chair. 3,765,718, Cl. 297-17.000.
Chevallier, Pierre, to Societe Etablissements Genoud & Cie. Valve action of gas-operated cigarette lighter. 3,765,822, Cl. 431-131.000.
Chevillon, Jack Rene Paul; Gauje, Georges Maurice Celestin Alois; and Grammagnac, Jacques Leopold Emile, to Societe Nationale d'Etude & de Construction de Moteurs d'Aviation (S.N.E.C.M.A.). Niobium-based oxidation resistant materials and process for their reparation. 3,765,953, Cl. 148-6.300.
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Clark, John C.: *See—*
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Clark, Joseph N.; Crossan, Irvin D.; and Toporcer, Louis H., to Dow Corning Corporation. Amidosilicon low modulus room temperature vulcanizable silicone elastomer. 3,766,127, Cl. 260-37.0sb.
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Coates Brothers & Company Limited: *See—*
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Codrino, Giuseppe. Pushbutton switch, provided with a lighted ideogram. 3,766,349, Cl. 200-167.00a.

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Cohen, Amnon Mordechai, to Polak's Frugal Works N.V. Mono-enol esters of 2-alkyl-cycloalkane-1,3-diones. 3,766,253, Cl. 260-488.00r.

Cohen, Sidney M., to Fuller Company. Method and apparatus for treating materials. 3,765,826, Cl. 432-58.000.

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Cole, William, Jr.: *See—*
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Colgate-Palmolive Company: *See—*
Wixon, Harold Eugene, 3,766,062.

Colleuille, Yves; and Perron, Robert, to Rhone-Poulenc S.A. Ammoxidation of chloromethyl compounds. 3,766,239, Cl. 260-465.00r.

Colt Industries Operating Corporation, mesne: *See—*
Zaid, Melvin, 3,765,116.

Columbia Broadcasting System, Inc.: *See—*
Sauvey, Donald R.; and Sharp, Paul H., 3,766,317.
Vennola, Jorma, 3,765,121.

Combination Engineering Inc.: *See—*
Hurlbut, William B., Sr.; and Liebig, Preston D., 3,765,980.

Combustion Engineering, Inc.: *See—*
Fretday, Jay Horl, 3,765,377.
Ruoss, Christian William, 3,765,585.

Commercial Solvents Corporation: *See—*
Edwards, Donald W., 3,765,966.

Commissariat a l'Energie Atomique: *See—*
Bronca, Gaston; Lefrancois, Christian; Hlasnik, Ivan; and Pouillange, Jean-Paul, 3,766,502.

Commonwealth of Australia, The: *See—*
Metcalfe, Kenneth A.; and Smith, Ian E., 3,766,072.

Compagnie des Montres Longines, Francillon S.A.: *See—*
Berney, Jean-Claude, 3,766,454.

Compagnie Francais de Raffinage: *See—*
Siard, Michel; and Laurentie, Michel, 3,765,985.

Compagnie Francaise des Petroles: *See—*
Menard, Louis Francois A., 3,765,184.

Compagnie Generale d'Electricite: *See—*
Budin, Jean-Pierre; and Roger, Georges, 3,765,768.

Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie: *See—*
Lejuene, Daniel, 3,765,469.
Verdier, Henri, 3,765,468.

Compagnie Industrielle des Lasers: *See—*
Roux, Roland, 3,766,487.

Concast AG: *See—*
Neumann, Friedhelm; and Willim, Fritz, 3,765,572.

Connelly, Robert. Floating boat fender. 3,765,366, Cl. 114-219.000.

Conner, Donald E.: *See—*
Zak, Henry; and Conner, Donald E., 3,766,267.

Conrad, Ulrich, to Daimler-Benz Aktiengesellschaft. Internal combustion engine with intermediate pipe inserted in passage between cylinder head and crankcase. 3,765,385, Cl. 123-41.840.

Conroux, Jean-Jacques; Jonville, Christian Pierre; and Zurcher, Erwin Alair, to Societe Pour la Recherche et le Developpement Technologiques ("Soret"). Apparatus for the circular knitting of hook and loop fastener elements. 3,765,193, Cl. 66-9.00r.

Consolidated Edison Company of New York, Inc.: *See—*
Haus, Paul Z., Jr., 3,765,240.

Consolidated Foods Corporation: *See—*
Anderson, James; Ducharme, Denis; and Descarries, Raymond, 3,765,052.

Contemporary Research Inc.: *See—*
Nayar, Harbhajan S., 3,765,866.

Continental Can Company, Inc.: *See—*
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Rarey, Kenneth W.; and Kennedy, John B., Jr., 3,765,654.

Continental Oil Company: *See—*
Crumb, Robert E., 3,765,722.
Sievert, John A., 3,765,234.

Control Concepts Inc.: *See—*
Zeuner, Kenneth W., 3,765,644.

Control Systems, Inc.: *See—*
Scott, Charles H., 3,766,365.

Cook, Albert C.: *See—*
Fisher, Raymond E.; and Cook, Albert C., 3,765,551.

Cook, Charles E., to Sperry Rand Corporation. Spread spectrum, linear FM communications system. 3,766,477, Cl. 325-30.000.

Cook, Kenneth Edwin. Hydrofoil watercraft steering and stabilizing mechanism. 3,765,356, Cl. 114-66.50h.

Cook, Lawrence E., to Dynamics Corporation of America. Wave soldering electrical connections. 3,765,591, Cl. 228-36.000.

Cook, Melvin A.: *See—*
Funk, Albert G.; Hansen, Boyd L.; and Cook, Melvin A., 3,765,967.

Cook, William R. Transistorized ignition system. 3,765,391, Cl. 123-148.00e.

Coombs, Robert V., to Sandoz-Wander, Inc. 15-Methyl-substituted steroids. 3,766,224, Cl. 260-397.400.

Cooper, Milton. Point-of-purchase display. 3,765,112, Cl. 40-126.00a.

Cooper, Stuart B.; and Grandmaison, John P., to Honeywell Information Systems, Inc. Communication line multiplexing apparatus having a main memory and an input-output memory. 3,766,531, Cl. 340-172.500.

Copeland, William M.: *See—*
Ponczek, George M.; Cousins, Otto J.; and Copeland, William M., 3,765,085.

Copley, Russell Dean: *See—*
Hubbard, Arthur Lowell; Copley, Russell Dean; and Gannon, Thomas Heral, 3,765,526.

Cornell, Dudley E., III. Teaching system. 3,765,106, Cl. 35-35.00c.

Cornell, Richard Henry, to General Electric Company. Metering valve for regulating the flow of contaminated fluids. 3,765,447, Cl. 137-538.000.

Cosco, Robert J.: *See—*
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Coulter Electronics, Inc., mesne: *See—*
Shaw, Clyde C., 3,765,771.

Countryman, James H. Flexible spout operated faucet. 3,765,455, Cl. 137-625.400.

Courbon, Paul, to Charbonnages de France. Apparatus for the suction and purification of polluted air. 3,765,155, Cl. 55-270.000.

Cousins, Otto J.: *See—*
Ponczek, George M.; Cousins, Otto J.; and Copeland, William M., 3,765,085.

Couvillon, Lucien A., Jr.; Carl, Christopher; Goldstein, Richard M.; Posner, Edward C.; and Green, Richard R. Method and apparatus for a single channel digital communications system. 3,766,315, Cl. 178-69.50r.

Cox, Ronald H.; and Strack, Hans A., to Texas Instruments, Incorporated. Ohmic contacts for gallium arsenide semiconductors. 3,765,880, Cl. 75-173.00r.

Cozert, Albert J., Jr., to Owens-Illinois, Inc. Mold knurling tool. 3,765,208, Cl. 72-81.000.

CPC International Inc.: *See—*
Gooding, Chester Martin; Parker, Wilbur; and Melnick, Daniel, 3,766,226.

Craig, Paul N.; and Zirkle, Charles L., to Smithkline Corporation. Substituted 10-piperazinoalkyl anthracenes. 3,766,183, Cl. 260-268.0tr.

Crain Cutter Company, Inc.: *See—*
Crain, Millard, Jr., 3,765,282.

Crain, Millard, Jr., to Crain Cutter Company, Inc. Method and apparatus for cutting plugs from carpets. 3,765,282, Cl. 83-13.000.

Cramer, Fred C.; and Kelley, Calvin E., to United States Steel Corporation. Linearly movable gate mechanism. 3,765,579, Cl. 222-512.000.

Cramphorn, Ronald Frederick. Carton. 3,765,594, Cl. 229-37.00r.

Cranston, Benjamin H., to Western Electric Company, Incorporated. Apparatus for bonding leads and testing bond strength. 3,765,845, Cl. 29-191.600.

Cranston, Benjamin Howell, to Western Electric Company, Incorporated. Explosive bonding of workpieces. 3,765,938, Cl. 117-212.000.

Craven, James M., to Du Pont de Nemours, E. I., and Company. Finishing process and composition. 3,765,924, Cl. 117-63.000.

Crawford, J. B.: *See—*
Raffensparger, Samuel L.; Burgess, Colin D.; and Crawford, J. B., 3,765,993.

Cresti, Aldo: *See—*
Badin, Elmer J.; Kerschner, Paul M.; and Cresti, Aldo, 3,765,850.

Crivello, James V., to General Electric Company. Polyimides. 3,766,138, Cl. 260-470.00z.

Crockford, Joseph R., to Kimberly-Clark Corporation. Arcuate tampon applicator. 3,765,417, Cl. 128-263.000.

Crossan, Irvin D.: *See—*
Brady, Sam A.; Clark, Joseph N.; Crossan, Irvin D.; and Toporcer, Louis H., 3,766,128.

Clark, Joseph N.; Crossan, Irvin D.; and Toporcer, Louis H., 3,766,127.

Crossland, Ronald K.; and Holden, Geoffrey, to Shell Oil Company. Block polymer compositions. 3,766,295, Cl. 260-829.000.

Crotty, Homer E.: *See—*
Tesdahl, Thomas C.; Holcer, Douglas L.; and Crotty, Homer E., 3,766,068.

Crowley, Arthur W.: *See—*
Pratt, Richard J.; Crowley, Arthur W.; Nason, Steven B.; and Schmehr, William R., 3,766,109.

Crowther, John Cooper, to Albright & Wilson Limited. Electrowinning of chromium metal. 3,766,028, Cl. 204-105.00r.

Crum, James N.: *See—*
Treff, Ernest H.; and Crum, James N., 3,765,328.

Crumb, Robert E., to Continental Oil Company. Method for recovering petroleum products or the like from subterranean mineral deposits. 3,765,722, Cl. 299-2.000.

Crump, Robert O.: *See—*
Olney, Frederick D., Jr.; Crump, Robert O.; and Kowalski, John L., 3,765,075.

Cruse, Adrian Robert, to Walker, Thomas, Limited. Fastening devices. 3,765,062, Cl. 24-201.00h.

Cryer, Edward, to Lucas, Joseph, (Industries) Limited. Electric switch module. 3,766,351, Cl. 200-168.10c.

Cubic Corporation: *See—*
Watt, Richard L., 3,766,555.

Culbertson, Alvin E.: *See—*
Bornhorst, Kenneth F.; Monroe, Jack L.; Culbertson, Alvin E.; Thomas, David E.; and Drake, Donald E., 3,766,560.

Cummins, Billy H.; Ashton, William B.; Brasher, James A.; and Askew, John D., Jr., to Texaco Inc. Lubricating oils by hydrocracking and solvent extraction. 3,766,055, Cl. 208-92.000.

Curado, Joseph G.; and Rampo, Redento R., to Sun Chemical Corporation. Solvent-free printing inks. 3,766,110, Cl. 260-26.000.

Curtis, Omer E., Jr.: *See—*
Mathew, Chempolil T.; Ulmer, Harry F.; Little, Edwin D.; and Curtis, Omer E., Jr., 3,766,204.

Curtis, William R., to Hercules Incorporated. Plastic spring assembly connected to a support tray. 3,765,038, Cl. 5-351.000.

Cyprus Metallurgical Processes Corporation: *See—*
Kruesi, Paul R., 3,766,026.

Dach, Hansjorg; and Gackstetter, Gunter. Gear shift control system. 3,765,271, Cl. 74-731.000.

Dahlkvist, Nils Goran; and Sander, Nils Borje Lennart, to SAB Brake Regulator Company, Limited. Clutch-release linkage automatic axial-acting slack adjuster. 3,765,522, Cl. 192-111.00a.

Dai Nippon Ink Kagaku Kozyo Kabushiki Kaisha: *See—*
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Daicel Ltd.: *See—*
Sawada, Hideo; Ohata, Keiichi; and Tsukane, Nagayoshi, 3,766,122.

Daiki Engineering Co., Ltd.: *See—*
Itakura, Tatsuo; Shoda, Tetsuo; and Yamamoto, Takashi, 3,766,045.

Daimler-Benz Aktiengesellschaft: *See—*
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Dalal, Girish T., to Goodrich, B. F., Company, The. ABS compositions for electroplating which contain asbestos. 3,766,134, Cl. 260-41.50a.

D'Alessio, Joseph R., to Rand-Whitney Packaging Corporation. Carton having diagonal flip-top corner cap. 3,765,593, Cl. 229-17.00r.

Dall Asta, Gino: *See—*
Carbonaro, Antonio; Greco, Alberto; Dall Asta, Gino; and Cameli, Nazzareno, 3,766,284.

Dalle Mura, Pio H., to United States of America, Navy. Nonlinear inductor proximity fuze. 3,765,338, Cl. 102-70.20p.

Dame, Richard F.; and Schmidt, Ewald E. Piezoelectric actuator. 3,766,415, Cl. 310-8.300.

Dangsi, Lajos: *See—*
Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dangsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, 3,766,235.

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Dardas, Richard B., to Pfizer Inc. Preservation of bovine stomachs for rennet extraction. 3,766,015, Cl. 195-66.000.

Dart Industries Inc.: *See—*
Hardy, Donald F.; and Palmer, Thomas W., III, 3,765,712.

Dasher, Campbell K., to Dasher, Campbell K., Jr. Vending machine product distributor. 3,765,566, Cl. 221-129.000.

Dasher, Campbell K., Jr.: *See—*
Dasher, Campbell K., 3,765,566.

Daviduke, Peter M., to Myers Excavating Ltd. Scraping blade for converting a cutting edge on a loading bucket. 3,765,109, Cl. 37-141.00r.

Davies, William Elfyn: *See—*
Sivilotti, Olivo G.; and Davies, William Elfyn, 3,766,386.

Davis, Allan C., to Meyercord Co., The. Case packing machine. 3,765,145, Cl. 53-61.000.

Davis, Jack. Building construction machine. 3,765,587, Cl. 227-100.000.

Davis, Richard L.: *See—*
Buscher, Richard G.; Davis, Richard L.; Kazmarek, Edward; and Larsen, Richard K., 3,765,263.

Daw, Avril. Pneumatic tube jumping toy. 3,765,673, Cl. 272-57.00e.

De Angelis, Giovanni; and Marchiaro, Ettore, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa Societa per Azioni. Percussion fuze for rockets. 3,765,339, Cl. 102-78.000.

de Groot, Robert, to N.V. Industrieele Handelscombinatie Holland. Device for discharging a hopper barge. 3,765,570, Cl. 222-132.000.

de la Garza, Jesus. Non-drip faucet valve. 3,765,643, Cl. 251-38.000.

De La Mare, Harold, to Shell Oil Company. Process for hydrogenation of polar copolymers and complexed copolymer compositions. 3,766,300, Cl. 260-879.000.

De La Mare, Harold E.; and Wilcoxen, Charles H., Jr., to Shell Oil Company. Preparation of polymers of increased average molecular weight from mono-lithium terminated block copolymers coupled with certain aryl monoesters. 3,766,301, Cl. 260-879.000.

De Roch, Irenee Seree: *See—*
Mimoun, Hubert; De Roch, Irenee Seree; Sajus, Lucien; and Menguy, Pierre, 3,766,232.

De Roissart, Henri; and Johannes, Conrad, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Methods of preparing extracts from vegetable products. 3,765,904, Cl. 426-384.000.

De Vries, Robert C.; and Fleischer, James F., to General Electric Company. Thermistors. 3,766,511, Cl. 338-22.000.

De Woskin, Irwin S., to Orthoband Company, Inc. Orthodontic traction apparatus and method. 3,765,093, Cl. 32-14.00d.

Dealy, Robert J. Athletic device. 3,766,538, Cl. 340-279.000.

Debaigt, Jean, to C.G.E.E. Alsthom. Assembly device for a connector. 3,766,515, Cl. 339-198.0ga.

Decker, Donald L.: *See—*
Ashley, Edmond J.; Decker, Donald L.; and Bennett, Jean M., 3,765,746.

Deebel, George P.; Doden, Bernard M.; and Morris, Myron J., to Magnavox Company, The. Telethermometer receiver and display device. 3,766,535, Cl. 340-181.000.

Deere & Company: *See—*
Hubbard, Arthur Lowell; Copley, Russell Dean; and Gannon, Thomas Heral, 3,765,526.

Defores, Eugene, to Societe dite: Societe le Foyer. Assembly device for the body and end section of a fountain pen. 3,765,782, Cl. 401-251.000.

Dehnert, Johannes; and Grau, Gerhard, to Radische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of 3-benzimidazoyl coumacins as fluorescent compounds. 3,766,199, Cl. 260-299.000.

Dekitsch, Anton: *See—*
Froede, Walter; Wilmers, Gottlieb; and Dekitsch, Anton, 3,765,392.

Del Castillo, Juan M. Teaching device for attachment to a keyboard instrument. 3,765,294, Cl. 84-166.000.

DEMAG Aktiengesellschaft: *See—*
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Demetresco, Mihai. Combustion engine driven generator including spring structure for oscillating the inductor at the mechanical resonant frequency between power strokes. 3,766,399, Cl. 290-40.000.

DePablo, Raul S.; and Benedict, Howard N., to Diamond Shamrock Corporation. Ruthenium catalyst. 3,766,089, Cl. 252-412.000.

Depoorter, Henri: *See—*
Schellekens, Jozef Remy; Ghys, Theofiel Hubert; and Depoorter, Henri, 3,765,901.

Depoorter, Henri; and Ghys, Theofiel Hubert, to Gevaert-Agfa N.V. Spectrally sensitized silver halide emulsions. 3,765,900, Cl. 96-140.000.

Descarries, Raymond: *See—*
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DeStevens, George: *See—*
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Deutsch Fastener Corporation: *See—*
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Gulistan, Bulent, 3,765,465.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
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Deutsche Vergaser Gesellschaft m.b.H. & Co., KG: *See—*
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Dever, James L.; and Hodan, James J., to Borg-Warner Corporation. Phosphorus acid-carboxylic acid anhydrides. 3,766,303, Cl. 260-927.00r.

Devine, Janet: *See—*
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,765,589.

Dewstow (Engineering) Limited: *See—*
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Dhooge, Jacque R., to Drive-In Theatre Manufacturing Company. Admission control system. 3,766,363, Cl. 235-61.60r.

Diamond Shamrock Corporation: *See—*
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Diamondhead Corporation: *See—*

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Didde, Alfonsus Augustinus Maria; and Velenture, Gerard Johannes Petrus, to U.S. Philips Corporation. Connection for the signal plate of a television camera tube. 3,766,425, Cl. 315-10.000.
Diebold, James P.: *See—*
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Dietrich, Roland: *See—*
Bauer, Sigrid; Brahm, Richard; and Dietrich, Roland, 3,765,898.
Dillenberger, Karl, to Bosch, Robert, Elektronik G.m.b.H. Directional broadband coupler arrangement. 3,766,499, Cl. 333-10.000.
Dillon, Joseph A., to Garlock, Inc., mesne. Process for non-destructive radiation degradation of polytetrafluoroethylene. 3,766,031, Cl. 204-159.200.
DiMarzio, Richard F. Simulated hockey goalie. 3,765,675, Cl. 273-1.00b.
Disston, Inc.: *See—*
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Dittmer, Albert K.: *See—*
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Dolan, Thomas E. Tire chain means. 3,765,467, Cl. 152-219.000.
Donelson, John E.; and Douglas, William M., to McDonnell Douglas Corporation. Air inlet. 3,765,623, Cl. 244-53.00b.
Donnard, Reed E.: *See—*
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Donner, Frederic Arno; and Asikainen, Niilo Kalervo, to Oy Tampella Ab. Fin assembly for fin-stabilized projectiles, and a process for its manufacture. 3,765,620, Cl. 244-3.230.
Dornie, Ralph William, to ESB Incorporated. Reaction product of polyalkylene imine and epoxy halo, ethylenic substituted difunctional compounds. 3,766,299, Cl. 260-874.000.
Dorschner, Kenneth P.; and Albright, James A., to SCM Corporation. Meta-ureidophenylalkyl carbamates. 3,766,250, Cl. 260-482.00c.
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Drehman, Lewis E., to Phillips Petroleum Company. Para-xylene production. 3,766,291, Cl. 260-673.500.
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Anderson, James; Ducharme, Denis; and Descarries, Raymond, 3,765,052.
Duey, Clarence J.; Prinz, Roy H.; and Ramey, James M., to Celanese Corporation. Recovery of pentaerythitol using tert-butyl alcohol. 3,766,277, Cl. 260-637.00p.
Duffer, Edward F.; Funk, Ernest J.; Jankowski, Alfred S.; Lane, Jack C.; Lehner, William L.; Oliver, Floyd F.; and Schneider, Mark, to Fairchild Camera and Instrument Corporation. Structure for simultaneously attaching a plurality of semiconductor dice to heir respective package leads. 3,765,590, Cl. 228-6.000.
Duimelaar, Jasper Hendrik, to U.S. Philips Corporation. Transmission system for the transmission of signals between two terminal stations through a transmission line including repeater stations. 3,766,337, Cl. 179-175.31r.
DuKane Corporation: *See—*
Samuels, Joseph P.; Hummel, Paul A.; and Roff, John G., 3,765,755.
Dunathan, Jay P.: *See—*
Moe, Martin A., Jr.; Isles, Juno; and Dunathan, Jay P., 3,765,372.
Duncan, James H.; and Hick, Brian K., to British Railway Board. Beta-alumina polycrystalline ceramics. 3,765,915, Cl. 106-73.400.
Dunkin, Albert, to Diamondhead Corporation. Apparatus for transferring objects. 3,765,037, Cl. 5-81.00r.
Dunning, Charles E., to Kimberly-Clark Corporation. Laminate. 3,765,997, Cl. 161-141.000.
Durametallic Corporation: *See—*
Adams, William V., 3,765,689.
Durhager, Paul-Gerhard: *See—*
Hutzenlaub, Armin S. P.; and Durhager, Paul-Gerhard, 3,765,616.
Durham, Roger Owen. Mixture control for fuel injection pumps. 3,765,388, Cl. 123-139.0ac.
Durr, Larry L.; and Clay, Byron Jan, to Textile Technology, Inc. Process for controlling the temperature of a dyeing mixture. 3,765,840, Cl. 8-175.000.
Dussia, R. Jules, to Chatham Precision, Inc. Flow control valve. 3,765,448, Cl. 137-553.000.
Dutkewych, Oleh B.: *See—*
Shipley, Charles R., Jr.; Shipley, Lucia H.; Gulla, Michael; and Dutkewych, Oleh B., 3,765,936.
Dykan, Vitaly Grigorievich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moislevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.
Dykstra, Donald P., to Portable Laboratories, Inc., mesne. Modular laboratory cabinets. 3,765,036, Cl. 4-192.000.
Dynamics Corporation of America: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
Bunger, Heinrich; and Renckhoff, Gustav, 3,766,227.

Ismail, Roshdy, 3,766,140.

Dzimoba, Willy; Beole, Rainer; Wolf, Gerhard; and Dreyer, Gunter, to Volkswagenwerk Aktiengesellschaft. Control device for two metallic salt components in electroplating baths. 3,765,436, Cl. 137-90.000.

Dzus Fastener Co., Inc.: *See—*
Dzus, Theodore, Jr., 3,765,265.

Dzus, Theodore, Jr., to Dzus Fastener Co., Inc. Clutch stop. 3,765,265, Cl. 74-526.000.

Eason, William N., Jr. Wheel alignment device. 3,765,219, Cl. 72-389.000.

Eastham, Jerome F.: *See—*
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Eastman Kodak Company: *See—*
Albers, Kenneth H.; Snapp, Thomas C., Jr.; and Blood, Alden E., 3,766,118.
Brink, Walter A.; and Hanley, Thomas G., 3,765,615.
Bush, Walter Monroe; and Gates, John Warburton, Jr., 3,765,886.
Fox, Charles J., 3,765,895.
Fox, Charles J., 3,765,896.
Mathes, Alva F., 3,765,583.
Shea, Michael D., 3,765,884.
Snapp, Thomas C., Jr.; Blood, Alden E.; and Albers, Kenneth H., 3,766,119.
Snapp, Thomas C., Jr.; and Blood, Alden E., 3,766,179.
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Weaver, Max A.; and Pridgen, Herman S., 3,765,830.
Wolfe, Robert N.; Palmer, Beverly F.; Hoadley, Harvey O.; and Van Heyningen, Roger S., 3,765,281.

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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Ebedev, Vladimir Konstantinovich; Baglay, Vitaly Michailovich; Bondarenko, Oleg Petrovich; Sidorenko, Michail Nikolaevich; and Bogachenko, Alexey Georgievich, 3,765,471.

ECC Corporation: *See—*
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Eckstein, Herbert P.: *See—*
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Eda, Shinjiro; Iwabuchi, Hiroshi; Yamagishi, Kazuo; and Nakagawa, Keiiti, to Nippon Kokan Kabushiki Kaisha. Method for controlling the amount of silicon contained as an impurity in high carbon ferrochronium. 3,765,871, Cl. 75-12.000.

Edamura, Fred Y.: *See—*
Giacobbe, Thomas J.; and Edamura, Fred Y., 3,766,244.

Eddleman, Roy T.; and Schmitz, Richard L., to Biospectrum, Incorporated. Laboratory hot plate. 3,766,360, Cl. 219-415.000.

Edgell, James E.: *See—*
Bigley, James E.; and Edgell, James E., 3,766,352.

Edman, Warren H.; and Patyrak, James W., to Holophane Company, Inc. Interchange and area lighting luminaire. 3,766,375, Cl. 240-25.000.

Edwards, Donald W., to Commercial Solvents Corporation. Gelled nitromethane compositions. 3,765,966, Cl. 149-18.000.

Efird, Gaston C., to Aluminum Company of America. Repairing electrolytic cells. 3,766,025, Cl. 204-67.000.

EG & G, Inc.: *See—*
Nelson, Melvin A.; Clark, John C.; and Lackey, Jerry G., 3,766,392.

Eide, Torvald, to Kaldnes Mek Verkated A/S. Automatic acting mechanism for control of stonable tween decks. 3,765,358, Cl. 114-72.000.

Eisenhauer, Elroy C. Jack construction. 3,765,650, Cl. 254-133.000.

Elder, Benjamin M.: *See—*
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Electro-Mechanical Instrument Co., Inc.: *See—*
Fleetman, Hobart H., 3,766,473.

Electro-Voice, Incorporated: *See—*
Watson, Alan Reed, 3,766,333.

Elevitch, Franklin R. Gel for electrophoresis. 3,766,047, Cl. 204-299.000.

Elf Union S.A.: *See—*
Robic, Gabriel, 3,765,609.

Elias, James A.; and Hook, Rollin E., to Armco Steel Corporation. Vacuum degassed, interstitial-free, low carbon steel and method for producing same. 3,765,874, Cl. 75-123.00h.

Eliasson, Jan A.: *See—*
Johansson, Lennart J. I.; Andersson, Sven E.; and Eliasson, Jan A., 3,765,115.

Elmeg Elektro-Mechanik GmbH: *See—*
Krauss, Hans Gunter, 3,766,366.

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ELPHIAC: *See—*
Barbieux, Andre, 3,766,353.

Elsaesser, Dieter, to EMV Elektro-Mechanische Versuchsanstalt Max Grundig. Stabilizing circuit for standing currents. 3,766,410, Cl. 307-255.000.

Elvico S.A.: *See—*
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Emelyanenko, July Georgievich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moislevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.

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Emhart Corporation: *See—*
Rowe, George E., 3,765,862.
Stephens, Edward John; Hart, Ernest Vader; and Vandandaigue, Andre Maurice, 3,765,533.

Emmick, Thomas L., to Lilly, Eli, and Company. Method for the preparation of juvenile hormone mimics. 3,766,209, Cl. 260-327.00m.

Emmons, William D.: *See—*
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Kine, Benjamin B.; and Emmons, William D., 3,766,156.

EMV Elektro-Mechanische Versuchsanstalt Max Grundig: *See—*
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Endo, Ichiro; and Yamanoughi, Teruo, to Canon Kabushiki Kaisha. Organic photoconductors sensitized with free radical liberators and organometallic compounds. 3,765,883, Cl. 96-1.600.

Engel, Willi G.: *See—*
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Engelbrecht, Alice M.: *See—*
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Engelbrecht, Robert M.; deceased (by Engelbrecht, Alice M.; executrix); and Hill, James C., to Monsanto Company. Process for the production of aromatic polycarboxylic acids. 3,766,258, Cl. 260-515.00p.

Engelhard Minerals & Chemicals Corporation: *See—*
Puskar, Victor, 3,765,921.

Engh, James T.: *See—*
Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; and Ulimer, Richard J., 3,765,603.

English, Roy. Flying toy. 3,765,122, Cl. 46-74.00d.

Enokido, Nobuo: *See—*
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Environmental Pollution Research Corporation: *See—*
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Ippolito, Amos D.; and Ma, William Y. L., 3,765,147.
Ippolito, Amos D.; and Ma, William Y. L., 3,765,148.

Erb, Roger L.; and Wesdock, James F., to Brockway Glass Company, Inc. Squeeze tester for glass containers. 3,765,231, Cl. 73-94.000.

Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, to Warner-Lambert Company. Disteroidyl-ethers. 3,766,223, Cl. 260-397.100.

Erdely, Ladislas, to Agence Nationale de Valorisation de la Recherche. Apparatus for recording swell frequency and propagation direction of waves. 3,765,236, Cl. 73-170.00a.

Erkens, Wilhelm, to Licentia Patent-Verwaltungs G.m.b.H. Device for the mechanical selection of reactor measuring canals. 3,766,005, Cl. 176-19.00r.

Ernst, Otto: *See—*
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ESB Incorporated: *See—*
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ESE Limited: *See—*
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Esso Research and Engineering Company: *See—*
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Etilinger, Ralph, Jr.; and Strobl, Fred P., Jr., to Raburn Products, Inc. Adjustable shelf supports. 3,765,343, Cl. 108-106.000.

Eto, Kunihiko: *See—*
Watanabe, Yasuo; Asano, Hiroaki; and Eto, Kunihiko, 3,766,369.

Evans, David John Ivor; Fustokian, David Alan Wayne; Norris, Leon Frederick; and Fraser, Robert William, to Sherritt Gordon Mines Limited. Preparation of thoriated nickel-chromium alloy powder. 3,765,867, Cl. 75-.5bc.

Ewoldt, Robert, to Outboard Marine Corporation. Seat cover. 3,765,039, Cl. 5-353.100.

Exley, John T., to Avco Corporation. Channel diffuser with splitter vanes. 3,765,792, Cl. 415-181.000.

Fabian, Hans, to NUKEM Nuklear-Chemie und- Metallurgie G.m.b.H. Target for producing neutrons. 3,766,389, Cl. 250-499.000.

Fabian, Hans, to Nukem, G.m.b.H. Target for neutron production in accelerator installations. 3,766,390, Cl. 250-499.000.

Fabrykowski, Zygmunt J.: *See—*
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Factory Mutual Research Corporation: *See—*
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Fahnenstich, Rudolf; Heese, Joachim; and Schuster, Gregor, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Use of N-acylamino acids, their salts and esters as emulsifying agents, and emulsion systems prepared therefrom. 3,766,085, Cl. 252-309000.

Fahrbach, Kurt Erich, to Siemens Aktiengesellschaft. Apparatus for measuring the speed of flowing media. 3,766,517, Cl. 340-3.00d.

Fairchild Camera and Instrument Corporation: *See—*
Duffer, Edward F.; Funk, Ernest J.; Jankowski, Alfred S.; Lane, Jack C.; Lehner, William L.; Oliver, Floyd F.; and Schneider, Mark, 3,765,590.

Fairchild, Shirlee, to Poly-Optics, Inc. Decorative structure. 3,766,374, Cl. 240-10.001.

Falbet, Jean Oswald. Electric safety plugs and sockets. 3,766,512, Cl. 339-14.00r.

Fallon, Herbert J., to Bendix Corporation, The. Automatic workpiece loading arrangement for a grinder feed wheel. 3,765,524, Cl. 198-59.000.

Farah Manufacturing Company, Inc.: *See—*
Jabor, Tony; and Holguin, Amador F., 3,765,348.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Hahnle, Reinhard; and Hoyer, Ernst, 3,766,164.
Schmidt, Erwin; and Beermann, Claus, 3,766,252.
Spietschka, Ernst; and Ische, Friedrich, 3,766,190.

Faries, Dyllard W.; and Shen, Yuen R., to United States of America, Navy. Device for simultaneously Q-switching several independent ruby lasers. 3,766,466, Cl. 331-94.500.

Faris, Edwin E.; and Kopala, Richard, to Berkey Photo, Inc. View finder. 3,765,313, Cl. 95-11.00v.

Farley, Holt A., to Kinedyne Corporation. Strap fastener end fitting. 3,765,063, Cl. 24-201.00d.

Farrell, John J. Apparatus for making plastic articles of irregular design. 3,765,809, Cl. 425-109.000.

Fastway Fasteners, Inc.: *See—*
Ptak, Wilbur F., 3,765,295.

Fau, Maurice. Partitions. 3,765,342, Cl. 105-376.000.

Fayolle, Michel: *See—*
Pruvot, Francois C.; and Fayolle, Michel, 3,765,437.

Fehler, Adolf: *See—*
Hagen, Hermann; Tartaglia, Peter; and Fehler, Adolf, 3,765,171.

Fekete, Gyorgy: *See—*
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Felczak, Theodore F., to Kendall Company, The, mesne. Eccentric locking device for surgical drainage members. 3,765,420, Cl. 128-347.000.

Feldman, Robert G., to Pyroil Company, Inc. Engine block heater. 3,766,356, Cl. 219-208.000.

Felmann, Ted S.: *See—*
Blankenhorn, Charles F.; and Felmann, Ted S., 3,766,063.

Felten, Edward J.; and Pearson, Kipp G., to United Aircraft Corporation. Method of making fuel cell electrode. 3,765,947, Cl. 136-120.0fc.

Fenton, Donald M., to Union Oil Company of California. Production of alcohols. 3,766,279, Cl. 260-638.00b.

Ferdinand, Irwin J.; and Kulbersh, Irwin R., to Hirsh Company, The. Telescoping shelf assembly. 3,765,344, Cl. 108-108.000.

Ferranti Limited: *See—*
Bruchez, Jeffrey Alan, 3,766,449.

Ferris, Donald L.; and Worrell, Robert J., to United Aircraft Corporation. Helicopter rotor blade. 3,765,124, Cl. 416-226.000.

Fey, Maurice G.; and Kemeny, George A., to Westinghouse Electric Corporation. Method of direct ore reduction using a short cap arc heater. 3,765,870, Cl. 75-10.00r.

Fiat Societa per Azioni: *See—*
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Peruglia, Marco, 3,765,728.
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Fichteman, William Lee, to Du Pont de Nemours, E. I., and Company. Viscosity stable chloroprene/sulfur polymer and its preparation. 3,766,121, Cl. 260-29.7so.

Fierro Esponja S.A.: *See—*
Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,765,872.

Fietzer, Ivan A.; Filipowicz, Edwin A.; and Kuckenbecker, Morris W., to American Can Company. Dispenser carton and holder. 3,765,565, Cl. 221-46.000.

Filipowicz, Edwin A.: *See—*
Fietzer, Ivan A.; Filipowicz, Edwin A.; and Kuckenbecker, Morris W., 3,765,565.

Filper Corporation: *See—*
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Filter Dynamics International, Inc.: *See—*
Vargo, John W., 3,765,527.

Fineman, Harold, to Girling Limited. Means for controlling operation of fluid-pressure operated boosters. 3,765,172, Cl. 60-545.000.

Fink, Leon, Jr.; Fricker, David C.; and Thompson, Larry D., to ECC Corporation. Speed responsive motor starting system. 3,766,457, Cl. 318-221.00e.

Fink, William C.: *See—*
Pfefferle, Donald H.; and Fink, William C., 3,765,079.

Finley, John W., to United States of America, Agriculture. Process of producing kynurenine. 3,766,261, Cl. 260-518.00r.

Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel Farhan, 3,766,152.
Tompkins, Dale A., 3,766,124.

Firth, Arthur Jose, 600 Machine Tools Limited. Forward and reverse drive mechanism for a machine tool. 3,765,259, Cl. 74-354.000.

Firth Machine Tools (International) Limited: *See—*
Hart, Raymond; and Sandell, Kenneth Charles, 3,765,787.

Fischer, Adolf: *See—*
Hiller, Heinrich; and Fischer, Adolf, 3,766,270.

Fischer, Alois; and Hill, Franz, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Involute tooth system for helical gears and finishing gear tool. 3,765,303, Cl. 90-1.600.

Fischer, Artur. Expansion anchor for use in support structures of relatively soft material. 3,765,296, Cl. 85-76.000.

Fischer, John J., to Patterson-Kelley Co. Inc., The. Rotary apparatus for treating particulate material. 3,765,102, Cl. 34-136.000.

Fish, Robert F. Liquid cooled engine. 3,765,479, Cl. 165-51.000.

Fisher, Raymond E.; and Cook, Albert C., to Sperry Rand Corporation. Unloading ramps for the load rack of a bale wagon. 3,765,551, Cl. 214-82.000.

Fisher, Robert E., to Mobil Oil Corporation. Apparatus for biaxial orientation of thermoplastic film. 3,765,067, Cl. 26-54.000.

Fisher, Simon, to Newcor, Inc. Alignment of shell onto mandrel. 3,765,278, Cl. 82-2.500.

Fisher, Stanton E. Animal litter. 3,765,371, Cl. 119-1.000.

Fitzgerald, John W., Jr.: *See—*
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Fixman, Jack: *See—*
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Fizitcheski Institut & Aneb Pri Ban: *See—*
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Flambeau Products Corporation: *See—*
Sauey, Lawrence K.; Douglas, Kenneth M.; and Rau, Gerald A., 3,765,559.

Fleetman, Hobart H., to Electro-Mechanical Instrument Co., Inc. Visual indicator for an electrical meter movement. 3,766,473, Cl. 324-96.000.

Fleischer, Helmut: *See—*
Schnaibel, Eberhard; Fleischer, Helmut; Schonart, Edgar; and Adler, Karl-Heinz, 3,766,485.

Fleischer, James F.: *See—*
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Fleissner, Heinz. Process for the dry production of a fiber web. 3,765,971, Cl. 156-82.200.

Fletcher-Henschel Thermal Industries, Ltd.: *See—*
Henchel, Herbert M., 3,765,389.

Flint, Alan G., to Industrial Modular Systems Corporation. Jig holder for clamping articles in place during treatment thereof. 3,766,046, Cl. 204-297.00w.

Floden, Bjorn Fritjof, to RCA Corporation. Film handling apparatus. 3,765,586, Cl. 226-84.000.

Flores, Margarita C.; and Staggs, Arnol. Drill head unit with throwaway insert holders. 3,765,496, Cl. 175-383.000.

Fluor Corporation: *See—*
Bogart, Marcel J. P.; Nielsen, Adners; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,766,278.

Flygare, Willis H.; and Ware, Bennie R., to University of Illinois Foundation. Analysis of polymer mixtures in solution utilizing electrophoretic light scattering apparatus. 3,766,048, Cl. 204-299.000.

FMC Corporation: *See—*
Sitver, Leonard Allan; and Yelin, Robert Emil, 3,765,834.
Stewart, Mary J., 3,766,143.

FMI-Mecfond-Aziende Meccaniche Riunite S.p.A.: *See—*
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Foamat Foods Corporation: *See—*
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Fonken, Gunther S.: *See—*
Herr, Milton E.; Murray Herbert C.; and Fonken, Gunther S., 3,766,012.

Foote, Daniel J., to Master Lock Company. Safety lock assemblage for movable items. 3,765,197, Cl. 70-58.000.

Foote, James B., to Owens-Illinois, Inc. Inertia pump for liquids. 3,765,800, Cl. 417-241.000.

Ford Motor Company: *See—*
Apostoleris, Theodore G., 3,766,418.
Kolehmainen, Jack A.; and Lemieux, George E., 3,765,272.
Lemieux, George E., 3,765,270.

Forenade Fabriksverken: *See—*
Johansson, Lennart J. I.; Andersson, Sven E.; and Eliasson, Jan A., 3,765,115.

Wallberg, Eric W., 3,765,298.
Forgione, Peter Salvatore; and Polistina, Rocco Alberto, to American Cyanamid Company. Preparation of water-insoluble carrier bound enzymes. 3,766,013, Cl. 195-63.000.
Forschepiepe, Fritz. Arrangement for processing slag. 3,765,860, Cl. 65-141.000.
Foster Wheeler Corporation: *See—*
Trozzi, Norman K., 3,765,824.
Fox, Charles J., to Eastman Kodak Company. Photographic paint-out composition containing a colorless stable-free radical precursor and a photoactuator. 3,765,895, Cl. 96-88.000.
Fox, Charles J., to Eastman Kodak Company. Photographic element containing a light sensitive photobleachant and a colored stable 2-amino-aryl-1-oxyl-3-oxide-2-imidazoline free radical. 3,765,896, Cl. 96-89.000.
Fox, Harry W.: *See—*
Nicolai, Van O.; and Fox, Harry W., 3,766,493.
Fox, Wayne F., to Triple "F", Inc. Machine for treating soybeans. 3,765,319, Cl. 99-343.000.
FRanchini, Enzo, to Fiat Societa per Azioni. Reinforcing structural element for vehicle body. 3,765,715, Cl. 296-38.00g.
Francis, Philip L., to General Motors Corporation. Split engine operation. 3,765,394, Cl. 123-198.00f.
Frankel, Charles: *See—*
Hoober, Daniel; and Frankel, Charles, 3,765,064.
Franklin Electric Co., Inc.: *See—*
Whitney, John A., 3,766,472.
Franko, Bernard V.: *See—*
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Fraser, Robert William: *See—*
Evans, David John Ivor; Fustokian, David Alan Wayne; Norris, Leon Frederick; and Fraser, Robert William, 3,765,867.
Fraze, Ermal C.: *See—*
Schubert, James R.; and Brown, Omar L., 3,765,352.
Freche, John C.; Waters, William J.; and Ashbrook, Richard L., to United States of America, National Aeronautics and Space Administration. Method of heat treating a formed powder product material. 3,765,958, Cl. 148-126.000.
Frederickson, Elmer. Nail feeding apparatus. 3,765,588, Cl. 227-113.000.
Freeman, Roger Francis Argyll: *See—*
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Fretday, Jay Horl, to Combustion Engineering, Inc. Air pollution control system for chemical recovery unit. 3,765,377, Cl. 122-7.00c.
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Friedrich, Marx Arthur; and Kooreaman, Hermanus Jacobus, to Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V. Pregnatetraenes. 3,766,171, Cl. 260-239.55d.
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, to Moeller & Neumann G.m.b.H. Overload protection arrangement for plate shears. 3,765,293, Cl. 83-698.000.
Fries, Paul, to Siemens Aktiengesellschaft. Device for cooling rotors. 3,765,480, Cl. 165-86.000.
Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Rapidly refuelable nuclear reactor. 3,766,006, Cl. 176-36.00r.
Fritts, Rex E., to Amana Refrigeration, Inc. Safety interlock system for microwave ovens. 3,766,437, Cl. 317-40.00r.
Froede, Walter; Wilmers, Gottlieb; and Dekitsch, Anton, to Audi Nsu Auto Union Aktiengesellschaft and Wankel GmbH. Rotary piston combustion engine. 3,765,392, Cl. 123-196.00r.
Frohberger, Paul Ernst: *See—*
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Fujita, Shiro; Kimura, Hiroshiro; Murakami, Tadao; and Arimoto, Heiji, to Unitika Kabushiki Kaisha. Process for producing low crimp polyethylene oxybenzoate yarns. 3,765,069, Cl. 28-72.170.
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Furst, Andor; Koch, Wolfgang; and Uskokovic, Milan Radoje, to Hoffmann-La Roche Inc. Retrosteroid A-ring formation. 3,766,213, Cl. 260-343.20s.
Fustokian, David Alan Wayne: *See—*
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Garlinghouse, Leslie H., to Garlinghouse Brothers. Polisher and burnisher. 3,765,127, Cl. 51-163.000.
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Garrod, Norman John. Recurd sleeves. 3,765,596, Cl. 229-44.00r.
Garvert, Clarence F. Cover for a pick-up truck. 3,765,717, Cl. 296-137.00b.
Gass-Erb, Kurt. Immersion heater. 3,766,358, Cl. 219-322.000.
Gassett, Paul L.; and Mc Leod, Wilfred R., to Gulf Research & Development Company. Offshore terminal. 3,765,463, Cl. 141-388.000.
Gates, John Warburton, Jr.: *See—*
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Gaylord, Norman G., to Champion International Corporation. Process for impregnating porous, cellulosic material by in situ polymerization of styrene-maleic anhydride complex. 3,765,934, Cl. 117-148.000.
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Gerber Garment Technology, Inc.: *See—*
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Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Vacuum hold-down apparatus. 3,765,289, Cl. 83-452.000.

Gerber, Heinz Joseph, to Gerber Garment Technology. Apparatus for forming bundles of sheet material. 3,765,349, Cl. 112-121.140.

Gerbig, Hans Erwin: *See—*
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Gerbig, Hans-Erwin: *See—*
Von Starck, Axel; Husmann, Surwolf; Gerbig, Hans-Erwin; and Schnake, Friedrich, 3,765,797.

Gerhardt, Jacob M. Oven wall and panel therefor. 3,765,135, Cl. 52-98.000.

Gerlach, William Cecil. Fireplace humidifier and smoke return. 3,765,399, Cl. 126-120.000.

Germain, Joseph C. Athletic protective device. 3,765,029, Cl. 2-2.000.

Germann, Reimar, to List, Hans. Device for measuring compression of piston engines. 3,765,233, Cl. 73-117.200.

Gerrard Company, Ltd.: *See—*
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Gershberg, David, to American Cyanamid Company. Sodium sulfate coated polyacrylamide gel particles. 3,766,120, Cl. 260-29.60z.

Gerson, Louis M., Co., Inc.: *See—*
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Gevaert-Agfa N.V.: *See—*
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Gewerkschaft Eisenhutte Westfalia: *See—*
Lobbe, Armin; and Rafael, Werner, 3,765,723.

Ghiretti, Aldo, to OCME Officina Costruzioni Mecegniche Emiliana S.r.l. Device for sealing containers having an eccentrically located pouring spout. 3,765,146, Cl. 53-67.000.

Ghys, Theofiel Hubert: *See—*
Depoorter, Henri; and Ghys, Theofiel Hubert, 3,765,900.
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Giacobbe, Thomas J.; and Edamura, Fred Y., to Dow Chemical Company, The. 2-(Substituted-phenyl)-ω-amino-alkan(thio)oate,-alken (thio)oate and -alkyn(thio)oate compounds. 3,766,244, Cl. 260-471.00a.

Giangiulio, Clayton E. Multi-purpose cutting device. 3,765,288, Cl. 83-408.000.

Gibson, James O.; Schumacher, Robert L.; and Myler, Kay L., to McDonnell Douglas Corporation. Low thermal expansion composites. 3,766,000, Cl. 161-170.000.

Gibson, Robert L., Sr. Snag-proof protectors for fishing hooks. 3,765,117, Cl. 43-42.100.

Gifford, William E.: *See—*
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Gigou, Claude: *See—*
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Gilchrist, Allan F., to SCM Corporation. Process for treatment of liquors using multicompartment baths. 3,766,039, Cl. 204-180.00r.

Gilchrist, Timothy Michael. Construction of rigid tensioned frame structure. 3,765,134, Cl. 52-63.000.

Gilev, Vitaly Konstantinovich; Bragin, Alexandr Sergeevich; Sarkisov, Rafael Tevosovich; and Stephanian, Ernst Arakelovich. Device for piling sheet-material strips cut by rotary shears. 3,765,150, Cl. 53-162.000.

Gillespie, Herman L. Bow-eye or lifting-eye, especially for mounting on a boat. 3,765,365, Cl. 114-218.000.

Ginsberg, Thomas N.; and Smolin, Edward Marvin, to GAF Corporation. Coating compositions. 3,766,297, Cl. 260-853.000.

Girling Limited: *See—*
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Gitchel, James Wallace. Dynamic balance. 3,765,362, Cl. 114-144.00a.

Giwer, Matthias M. Reinforced high pressure test vessel. 3,765,557, Cl. 220-3.000.

Glass, Marvin, & Associates: *See—*
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Glass, Marvin I.: *See—*
Morrison, Howard J.; and Glass, Marvin I., 3,765,693.

Glassman, Stanley H. Musical chairs game. 3,765,681, Cl. 273-134.0ae.

Gleason, C. Roy; and Thomas, Gordon A., to World-Wide Paper Reclamation, Inc., mesne. Reclaiming pulp from waste papers by treating with a solution of sodium hydroxide, sodium carbonate, sodium or ammonium bicarbonate, and sodium borate. 3,766,001, Cl. 1628.000.

Glindmeyer, Friedrich; Hennenberg, Wilhelm; and Limpens, Karl, to William Prym-Werke KG, Firma. Method of production of a zipper by weaving. 3,765,457, Cl. 139-35.000.

Glover, Charles J.: *See—*
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GNT Automatic A/S: *See—*
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Goddard, Lloyd E., to Ethyl Corporation. Phenol alkylation process. 3,766,276, Cl. 260-624.00r.

Godfrey, Keith Ernest, to Reckitt & Colman Products Limited. Substituted 2-phenoxyphenoyl acetic acids. 3,766,263, Cl. 260-520.000.

Godfrey, Thomas G.: *See—*
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Golay, Bernard: *See—*
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Gold, Heinrich: *See—*
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Goldbert, Donald D.; and Rosen, Stanley R. Prosthetic knee joint assembly with mutually slidable and rollable joint sections. 3,765,033, Cl. 3-1.000.

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Goldstein, Richard M.: *See—*
Couvillon, Lucien A., Jr.; Carl, Christopher; Goldstein, Richard M.; Posner, Edward C.; and Green, Richard R., 3,766,315.

Gonner, William R., Jr., to Stahl-Urban Company, mesne. Automatic feeder for workpiece of fabric or the like. 3,765,672, Cl. 271-10.000.

Goodin, Raymon L. Pool cleaning systems. 3,765,432, Cl. 134-168.00r.

Gooding, Chester Martin; Parker, Wilbur; and Melnick, Daniel, to CPC International Inc. Peanut butter. 3,766,226, Cl. 260-398.500.

Goodrich, B. F., Company, The: *See—*
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Goodyear Tire & Rubber Company, The: *See—*
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Gordon, George Simon, to RCA Corporation. Method of preventing inoperation of a component by loose particles of material. 3,765,941, Cl. 134-42.000.

Gordon, Theodore J.; and Becker, Harold S., to Applied Futures, Inc. Voting machine. 3,766,541, Cl. 340-332.000.

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Gosser, Lawrence Wayne; and Tolman, Chadwick Alma, to Du Pont de Nemours, E. I., and Company. Compounds of zero-valent nickel containing N-bonded nitriles. 3,766,231, Cl. 260-439.00r.

Gottlieb, Arnold J.; and Majesko, George A., to Chase, W. M., Company, mesne. Thermostatic bimetals. 3,765,846, Cl. 29-195.500.

Gottschal, Gernot, to Morat, Franz, G.m.b.H., Firma. Device for the optical-electrical scanning of an information carrier. 3,766,394, Cl. 250-205.00r.

Grabhorn, Robert H., to Systematiks, Inc. Blood specimen collecting system. 3,765,402, Cl. 128-2.00f.

Grace, W. R., & Co.: *See—*
Tesdahl, Thomas C.; Holcer, Douglas L.; and Crotty, Homer E., 3,766,068.
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Graefe, Albert D., to Sperry Rand Corporation. Multiple rotation gyroscope. 3,765,250, Cl. 74-5.000.

Grammagnac, Jacques Leopold Emile: *See—*
Chevillon, Jack Rene Paul; Gauje, Georges Maurice Celestin Alois; and Grammagnac, Jacques Leopold Emile, 3,765,953.

Grand Haven Stamped Products Company: *See—*
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Grassos Koninklijke Machinenfabrieken N.V.: *See—*
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Gratzmuller, Jean Louis. High power hydraulic control systems for an electric switch. 3,766,343, Cl. 200-82.00b.

Grau, Gerhard: *See—*
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Graves, Howard T.: *See—*
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Gray, Stuart William, to U.S. Philips Corporation. Controlling and monitoring combustible gases. 3,766,441, Cl. 317-157.000.

Greaney, Harry D. Game device having push-pull cue for holding plurality of playing pieces. 3,765,678, Cl. 273-119.00r.

Greaney, John E., to General Nuclear, Inc. Radioactive tracer method and apparatus for boreholes. 3,766,388, Cl. 250-266.000.

Great Canadian Oil Sands, Limited: *See—*
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Greco, Alberto: *See—*
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Green, Derek, to United Kingdom Atomic Energy Authority. Extrusion. 3,765,216, Cl. 72-262.000.

Green, Donald; Kane, Michael; and Sullivan, James P., to Magnion Inc., in care of Kane, Michael. Brush with retractable bristles. 3,765,049, Cl. 15-169.000.

Green, Richard R.: *See—*
Couvillon, Lucien A., Jr.; Carl, Christopher; Goldstein, Richard M.; Posner, Edward C.; and Green, Richard R., 3,766,315.

Greenberg, Jacob, to Anti-Pollution Systems, Inc. Process for treating polluted water with low temperature brine solution. 3,766,087, Cl. 252-348.000.

Greene, Howard M., to Muroc Products Corporation. Method of electropolishing. 3,766,030, Cl. 204-129.900.

Gregory, Derek P., to Institute of Gas Technology. Method and apparatus for CO_2 conversion to methane. 3,766,027, Cl. 204-72.000.

Greie, Donald S.; Schultz, Fred D.; and Hernandez, Henry R., to National Starch and Chemical Corporation. Nonwoven products. 3,766,002, Cl. 162-146.000.

Grewe, Ferdinand: *See—*
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Grey, Jerry. Apparatus for removing contaminates entrained in a gas stream. 3,765,153, Cl. 55-118.000.

Groneman, Norman A.: *See—*
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Gronroos, Charles M., to United States of America, Navy. Life support system with a hull heat exchanger. 3,765,354, Cl. 114-16.00r.

Grove, Leroy King. Electric brake armature. 3,765,517, Cl. 188-138.000.

Grove, Marvin H.; Kim, Kee W.; and Van Arsdale, Lyle R., to M & J Valve Company. Valve construction. 3,765,440, Cl. 137-246.220.

Grove, Marvin H.; and Kim, Kee W., to M & J Valve Company and M & J Development Company. Valve construction and method. 3,765,647, Cl. 251-317.000.

Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig: *See—*
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Gschwandtner, Eric. Transducer circuit for simultaneous two way operation. 3,766,319, Cl. 179-1.0hf.

GTE Automatic Electric Laboratories, Incorporated: *See—*
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GTE Laboratories, Incorporated: *See—*
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GTE Sylvania Incorporated: *See—*
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Guenther, Kenneth L.; and Barcik, Charles P., to Ramm Industries. Locking device. 3,766,341, Cl. 200-44.000.

Guerra, Guido: *See—*
Vitale, Eupremio; and Guerra, Guido, 3,766,009.

Guigan, Jean. Apparatus for distributing a liquid volume into a number of receptacles. 3,766,016, Cl. 195-140.000.

Guilbon, Robert S.; and Heaton, James W., to Kennametal Inc. Adjustable dovetail boring bar. 3,765,788, Cl. 408-181.000.

Gulf Research & Development Company: *See—*
Gassett, Paul L.; and Mc Leod, Wilfred R., 3,765,463.

Gulistan, Bulent, to Deutsch Fastener Corporation. Method of attaching a floating nut to a workpiece. 3,765,078, Cl. 29-432.000.

Gulistan, Bulent, to Deutsch Fastener Corporation. Retractable captive fastener. 3,765,465, Cl. 151-69.000.

Gulla, Michael: *See—*
Shipley, Charles R., Jr.; Shipley, Lucia H.; Gulla, Michael; and Dutkewych, Oleh B., 3,765,936.

Gundlach, Robert W., to Xerox Corporation. Xeroprinting employing letterpress surface covered with a layer of resistive material. 3,765,330, Cl. 101-426.000.

Gusmer, Frederick E.; Sundberg, Carl W., Jr.; and Hayes, Joseph E., Jr. Apparatus for ejecting a mixture of liquids. 3,765,605, Cl. 239-61.000.

Gutbrod, Willi, to Audi Nsu Auto Union Aktiengesellschaft and Wankel GmbH. Trochoid type of rotary piston combustion engine. 3,765,806, Cl. 418-91.000.

Guu, Biing-Yan; and Liu, Hsin-Ching. Writing implements. 3,765,780, Cl. 401-17.000.

Haas, Thomas W.: *See—*
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Hachiya, Tomoyoshi: *See—*
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Hackman, Kenneth V., to Southwest Products Co. Bearing assembly. 3,765,733, Cl. 308-72.000.

Hagen, Albert: *See—*
Schluter, Wilhelm; Pohler, Heinz; and Hagen, Albert, 3,765,254.

Hagen, Hermann; Tartaglia, Peter; and Fehler, Adolf, to Motoren- und Turbinen-Union Munchen G.m.b.H. Combustion chamber for gas turbine engines. 3,765,171, Cl. 60-39.230.

Haggerty, William Andrew, to Cincinnati Milacron, Inc. Electrochemical machining tool for machining conjugate surfaces of revolution. 3,766,029, Cl. 204-129.500.

Hahn, Laurence W. Method of sealing a cover to a battery. 3,765,951, Cl. 136-176.000.

Hahnle, Reinhard; and Hoyer, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Substituted 4-(2-nitroisobutylamino)-azobenzene. 3,766,164, Cl. 260-205.000.

Haines, Robert M. Aircraft control means. 3,765,622, Cl. 244-17.110.

Hajduk, Marian S. Unified area surveillance, communication and mobile station guidance system. 3,766,552, Cl. 343-6.00r.

Halaby, Josef. Pipe with a plurality of receptacles. 3,765,426, Cl. 131-176.000.

Halasa, Adel Farhan, to Firestone Tire & Rubber Company, The. Process for polymerizing conjugated dienes. 3,766,152, Cl. 260-83.700.

Haldor Frederik Axel Topsoe: *See—*
Bogart, Marcel J. P.; Nielsen, Adners; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,766,278.

Hall, George E. Head pole support for horse harness. 3,765,151, Cl. 55-71.000.

Hallenbeck, Gordon R., to General Electric Company. Side support for synchronous rotor field winding. 3,766,417, Cl. 310-214.000.

Halliburton Company: *See—*
Cole, Clinton W., 3,765,449.

Halsey, George H. Non-destructive testing arrangements-movable reflectors. 3,765,228, Cl. 73-67.500.

Hamachi, Kazuo; Shimanaka, Hiroshi; Kawkkami, Tatsuo; Irie, Toshio; and Komoda, Akira, to Kawasaki Steel Corporation. Method of forming electric insulating coating on the surface of silicon steel sheet with serpentine. 3,765,957, Cl. 148-113.000.

Hamby, Tyler W., Jr.; and Broussard, Leo P., to Shell Oil Company. Method and apparatus for treating selected reservoir portions. 3,765,484, Cl. 166-254.000.

Hamilton, Wilson S.: *See—*
Burnie, Robert T.; Clarke, David W.; and Hamilton, Wilson S., 3,766,123.

Hammer, James R.: *See—*
Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; and Ulimer, Richard J., 3,765,603.

Hammond Corporation: *See—*
Schrecongost, Ray B., 3,766,305.

Hammond, Daniel D. Marana, to Intermountain Aviation, Inc. Automatically unloading cargo enclosure. 3,765,711, Cl. 294-77.000.

Hampl, Franz, to Jaeger, Erich. Dynamo ergometer. 3,765,245, Cl. 73-379.000.

Hampson Jig, Tool and Automation Limited: *See—*
Hayward, Walter Francis, 3,765,304.

Hanahan, Frank T.; and Tortorella, John H. Foldable container, litter bag, dust pan, brush and blank therefor. 3,765,044, Cl. 15-104.800.

Handel, Siegfried K. Rotary switch for controlling linear motion. 3,766,338, Cl. 200-11.00r.

Hanley, Thomas G.: *See—*
Brink, Walter A.; and Hanley, Thomas G., 3,765,615.

Hansen, Boyd L.: *See—*
Funk, Albert G.; Hansen, Boyd L.; and Cook, Melvin A., 3,765,967.

Hansen, George R.: *See—*
La Bar, Richard G.; and Hansen, George R., 3,765,914.

Hansen, Norbert Ernst Fritz; and Stotz, Siegfried Wilhelm, to U.S. Philips Corporation. Dispersion of finely divided substances in an isoparaffin apolar dispersing agent. 3,766,125, Cl. 260-33.60r.

Hardin, N. A.: *See—*
Brandon, Clarence W., 3,765,804.

Hardt, Lothar; Muller-Wartenberg, Heinz; and Rauschenberger, Hans, to Metallgesellschaft Aktiengesellschaft. Tube-type electrostatic precipitator. 3,765,154, Cl. 55-146.000.

Hardy, Albert H., Sr., to Beck Carton Corporation. Package comprising interlocked carton and contents. 3,765,531, Cl. 206-60.00r.

Hardy, Donald F.; and Palmer, Thomas W., III, to Dart Industries Inc. Transfer mechanism gripping device. 3,765,712, Cl. 294-87.00r.

Hare, Alan W.; and Carlson, Ronald J., to Northwest Technical Industries, Inc. Snare device. 3,765,119, Cl. 43-87.000.

Harlan, Alfred R.; and Petersen, Ronald E., to Motorola, Inc. Record mode release mechanism. 3,765,685, Cl. 274-4.00e.

Harmala, Erkki E. Walking vehicles. 3,765,499, Cl. 180-8.00e.

Harmetz, Ronald: *See—*
Sletzinger, Meyer; Reinhold, Donald F.; and Harmetz, Ronald, 3,766,259.

Harrington, Joseph K.; and Trepka, Robert D., to Minnesota Mining and Manufacturing Company. N-(heterocyclicalkyl) fluoroalkanesulfonamides. 3,766,193, Cl. 260-294.80f.

Harris, Allschwil: *See—*
Mueller, Volkmar; Berendt, Hans Ulrich; and Harris, Allschwil, 3,765,839.

Harris, Elmer E.: *See—*
Lindquist, Steven M.; Baker, Kenneth A.; Harris, Elmer E.; and Wineberg, Kenneth W., 3,765,142.

Harris, Gerald R.; and Properzio, William S., to United States of America, Health, Education and Welfare. Techniques and apparatus for calibrating the silovoltage indicator on diagnostic X-ray generators. 3,766,383, Cl. 250-252.000.

Harris, Howard E.; and Miskowicz, Carl J., to Schering Corporation. Novel process for preparing steroid halohydrins and vinyl halides. 3,766,225, Cl. 260-397.400.

Harris, Leroy S., to K-G Industries, Inc. Hydraulic roll drive means for briquetters and compactors. 3,765,173, Cl. 60-97.00e.

Harris-Intertype Corporation: *See—*
Treff, Ernest H.; and Crum, James N., 3,765,328.

Harris-Intertype Corporation, mesne: *See—*
Butcher, Wade E., Jr.; and Sims, Robert J., 3,766,559.
Mason, Donald R., 3,766,447.

Harrison, Anthony William, to Girling Limited. Hydraulic actuators. 3,765,514, Cl. 188-72.400.

Harrison, Larry, to Xerox Corporation. Suction mount. 3,765,638, Cl. 248-363.000.

Harrison, Sidney L., to Heavy Oil Producer Service, Incorporated. Lubricated pump rod string oil wells. 3,765,482, Cl. 166-106.000.

Harry, Henry A. Weather sealing strip. 3,765,140, Cl. 52-409.000.

Hart, Anthony Christopher, to International Nickel Company, Inc., The. Coloring stainless steels. 3,766,023, Cl. 204-38.00b.

Hart, Ernest Vader: *See—*
Stephens, Edward John; Hart, Ernest Vader; and Vandandaigue, Andre Maurice, 3,765,533.

Hart, Raymond; and Sandell, Kenneth Charles, to Firth Machine Tools (International) Limited. Multi-spindle machine tool heads. 3,765,787, Cl. 408-53.000.

Hartel, Gunter; and Walter, Dietmar, to Deutsche Vergaser Gesellschaft m.b.H. & Co., KG. Carburetor for automotive vehicles. 3,765,658, Cl. 261-41.00d.

Hartwig, Walter J., to Allis-Chalmers Corporation. Apparatus for and method of adjusting location of shaft bearings on grate conveyor. 3,765,525, Cl. 198-208.000.

Hasegawa, Katsue: *See—*
Asakawa, Shirow; Nishiyama, Sumio; and Hasegawa, Katsue, 3,766,443.
Sano, Reiji; Yoshimura, Susumu; Asakawa, Shirow; and Hasegawa, Katsue, 3,765,888.

Hasegawa, Kenichi. Nut for fixing an electric instrument and fixing means of the same. 3,765,464, Cl. 151-41.700.

Hashimoto, Takao: *See—*
Takahashi, Makoto; Hashimoto, Takao; and Takahashi, Akinori, 3,766,412.

Hashimoto, Yasuyuki; Torii, Osamu; and Torii, Sugako, to Mitsubishi Pencil Co., Ltd. Mechanical pencil. 3,765,781, Cl. 401-67.000.

Hashizume, Nobuo: *See—*
Kataoka, Shoei; Tateno, Hiroshi; Kawashima, Mitsuo; Komamiya, Yasuo; Morisue, Michitada; and Hashizume, Nobuo, 3,766,372.

Hatch, Roosevelt L. Wheel bearing safety washer. 3,765,737, Cl. 308-211.000.

Hatcher, Cecil W.; and Warner, Gene. Pavement cutting machine with tractor-trailer assembly. 3,765,724, Cl. 299-39.000.

Hatfield, William C.; and Reed, John M., to Lordel Manufacturing Services, Inc. Control circuits for key telephone system. 3,766,325, Cl. 179-84.00a.

Haus, Paul Z., Jr., to Consolidated Edison Company of New York, Inc. Method and apparatus for detecting oil leaks in cables. 3,765,240, Cl. 73-204.000.

Hausermann, Werner; Kaiser, Ado; and Scheer, Marcel, to Hoffmann-La Roche Inc. 3,5-Dialkoxyalkoxy-4-substituted benzoic acid esters. 3,766,245, Cl. 260-473.00r.

Hava Kogyo Kabushiki Kaisha: *See—*
Saruhashi, Shigeru, 3,765,691.

Hawker Siddeley Aviation Limited: *See—*
Maynard, Harry; and Boot, Roy Desmond, 3,765,626.

Hawkins, David N., to Filper Corporation. Method and apparatus for printing on empty bags. 3,765,326, Cl. 101-44.000.

Hay, Charles N., to General Motors Corporation. Bearing locking device. 3,765,065, Cl. 24-256.000.

Hay, William D.; and Jensen, Robert, to Unit Process Assemblies, Inc. Apparatus for testing the integrity of a thru-hole plating in circuit board workpieces or the like by measuring the effective thickness thereof. 3,766,470, Cl. 324-64.000.

Hayakawa, Shigeru: *See—*
Wasa, Kiyotaka; and Hayakawa, Shigeru, 3,766,041.

Hayashi, Katsumi: *See—*
Iwano, Haruhiko; Hayashi, Katsumi; and Matsushita, Sachio, 3,765,892.

Hayashibara Company: *See—*
Kurimoto, Masashi; and Yoshida, Mikihiko, 3,766,011.
Masuda, Kazuo; and Sugimoto, Kaname, 3,766,014.

Hayes, Joseph E., Jr.: *See—*
Gusmer, Frederick E.; Sundberg, Carl W., Jr.; and Hayes, Joseph E., Jr., 3,765,605.

Hayward, Walter Francis, 1/2 to Hampson Jig, Tool and Automation Limited. Copying devices for milling machines. 3,765,304, Cl. 90-13.900.

Heaton, James W.: *See—*
Guilbon, Robert S.; and Heaton, James W., 3,765,788.

Heavy Oil Producer Service, Incorporated: *See—*
Harrison, Sidney L., 3,765,482.

HEC Corporation: *See—*
Schopfer, Walter S.; and Wuerth, Dietrich P., 3,766,540.

Hedgewick, Peter, to Reflex Corporation of Canada Limited. Wrap-around tail light. 3,766,373, Cl. 240-8.300.

Heese, Joachim: *See—*
Fahnenstich, Rudolf; Heese, Joachim; and Schuster, Gregor, 3,766,085.

Heffan, Howard; Bergh, Emil M.; Mauch, John W.; and Sawick, Walter J., to United States of America, Navy. Nondestructive test device using radiation to detect flaws in materials. 3,766,387, Cl. 250-360.000.

Hegendorfer, Max, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt Max Grundig. Arrangement for applying a signal to a selected line. 3,766,407, Cl. 307-223.000.

Heidtmann, Donald S., to General Electric Company. Capacitive sensing dryer control. 3,765,100, Cl. 34-45.000.

Heimiller, Robert C.: *See—*
Burnsweig, Joseph, Jr.; and Heimiller, Robert C., 3,766,551.

Heinrich, Peter: *See—*
Schierloh, Owe; and Heinrich, Peter, 3,765,869.

Heinz, H. J., Company: *See—*
Lindquist, Steven M.; Baker, Kenneth A.; Harris, Elmer E.; and Wineberg, Kenneth W., 3,765,142.

Hekal, Ihab M; and Payne, Richard A., to Continental Can Company, Inc. Easy opening container provided with opening edge protective hot melt adhesive band. 3,765,561, Cl. 220-54.000.

Helin, Ronald P.: *See—*
Schaberg, Richard R.; Perino, Peter R.; and Helin, Ronald P., 3,765,256.

Heller, Hansjorg; Rody, Jean; and Keller, Ernst, to Ciba-Geigy AG. UV-absorbing hydroxyphenyl-benzotriazoles. 3,766,205, Cl. 260-308.00b.

Hemfort, Heinrich, to Westfalia Separator A.G. Self cleaning centrifuge drum with stepwise variable closing pressure. 3,765,599, Cl. 233-20.00a.

Hempel's J. C., Skibsfarve-Fabrik A/S: *See—*
Bender-Christensen, Bent, 3,765,923.

Henchel, Herbert M., to Fletcher-Henschel Thermal Industries, Ltd. Heater apparatus with controlled air and fuel intake. 3,765,389, Cl. 123-142.50r.

Henderson, Raymond Eugene. Portable charcoal stove. 3,765,397, Cl. 126-25.00r.

Hendrickson, Ellis C.; and Rupnick, Edward J., to United States of America, Army. Propulsion systems. 3,765,367, Cl. 115-1.00r.

Henkel & Cie G.m.b.H.: *See—*
Kassner, Karl-Heinz, 3,766,296.
Plapper, Jurgen; Stein, Werner; and Baumann, Horst, 3,765,833.

Hennenberg, Wilhelm: *See—*
Glindmeyer, Friedrich; Hennenberg, Wilhelm; and Limpens, Karl, 3,765,457.

Henning, Andrew R., to Shakespeare Company. Bow mount for trolling motors. 3,765,369, Cl. 115-17.000.

Henry, Donald E.: *See—*
Vandemore, James J.; and Henry, Donald E., 3,766,550.

Hensley, Albert L., Jr., to Standard Oil Company. Process for hydroprocessing heavy hydrocarbon feedstocks. 3,766,058, Cl. 208-210.000.

Hentz, Thomas E.; and Burroughs, Robert K., to LeBlond Inc. Manual control system for numerically controlled machine. 3,766,460, Cl. 318-571.000.

Hentzschel, Hanspeter P. K., to Texas Instruments, Incorporated. Vacuum evaporated thin film resistors. 3,765,940, Cl. 117-227.000.

Hepp, Otto F.; and Jarvis, John P., to Aero Service Corporation. Disc recording stylus driver. 3,766,330, Cl. 179-100.40c.

Hepter, Murray, to United States of America, Navy. Optical ranging device. 3,765,765, Cl. 356-4.000.

Herbst, Paul T.; and Bergman, Lawrence A., to Lord Corporation. Resilient gimbal mounting. 3,765,631, Cl. 248-204.000.

Hercules Incorporated: *See—*
Breslow, David S., 3,766,216.
Curtis, William R., 3,765,038.
Vandenberg, Edwin J.; and Woods, Foulk, 3,766,091.

Hernandez, Henry R.: *See—*
Greie, Donald S.; Schultz, Fred D.; and Hernandez, Henry R., 3,766,002.

Herr, Milton E.; Murray Herbert C.; and Fonken, Gunther S., to Upjohn Company, The. Method for the nicrobiological oxygenation of

N-benzoyl-N,2,3,3-tetramethyl-exo-2-horbornanamine. 3,766,012, Cl. 195o51.00r.

Herrmann, Helmut Friedrich; and Dizon, Rolando M., to Metalloxyd Gesellschaft mit beschrankter Haftung. Apparatus for continuous etching and anodizing of aluminum. 3,766,043, Cl. 204-207.000.

Herzog, Donald George; and Reno, Charles William, to RCA Corporation. Optical data transmission system employing polarization-shift, multiple-cavity laser. 3,766,393, Cl. 250-199.000.

Hess, Alexander Mcd. Centrifugal type ball projecting device. 3,765,395, Cl. 124-4.000.

Hess, Hans-Jurgen E.; and Nelson, Roger P., to Pfizer Inc. 18β-Glycyrrhetinic acid amides useful as antiulcer agents. 3,766,206, Cl. 260-309.000.

Hesse, Karl Dieter; and Gorke, Klaus, to Chemische Werke Huels Aktiengesellschaft. Process for the preparation of adducts from maleic anhydride and liquid, low-molecular weight polybutadienes. 3,766,215, Cl. 260-346.800.

Hewlett-Packard Company: *See—*
Kruger, William P.; Turner, Wilson R.; and Board, Robert D., 3,766,396.
Walther, John S., 3,766,370.

Hick, Brian K.: *See—*
Duncan, James H.; and Hick, Brian K., 3,765,915.

Higashiyama, Kenji; and Hirata, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Method for measuring an activity of chromium(III) ions. 3,766,022, Cl. 204-1.00t.

Higgins, Wilja M. Decorative animal collar attachment. 3,765,376, Cl. 119-106.000.

Hijita, Hiromi; and Hirao, Manoru, to Ken Hayashibara. Shaped body of gelatin containing amylose and/or amylitol. 3,765,917, Cl. 106-126.000.

Hikosaka, Mitsuo. Digital phase detector. 3,766,545, Cl. 340-347.0sy.

Hildebrand, Robert Peter: *See—*
Clarke, Brian James; Hildebrand, Robert Peter; Lance, David George; and White, Alexander William, 3,765,903.

Hile, John W., to General Motors Corporation. Catalytic converter monitor. 3,766,536, Cl. 340-229.000.

Hill, Ewing K.: *See—*
Spencer, Robert L.; and Hill, Ewing K., 3,765,229.

Hill, Franz: *See—*
Fischer, Alois; and Hill, Franz, 3,765,303.

Hill, James C.: *See—*
Engelbrecht, Robert M.; and Hill, James C., 3,766,258.

Hiller, Heinrich; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Alkylaminooxanil oximes. 3,766,270, Cl. 260-562.00n.

Hirakawa, Keizo: *See—*
Honda, Makoto; Kozono, Tetsuro; Hirakawa, Keizo; and Sugita, Nobuo, 3,766,092.

Hirano, Katasuhiku: *See—*
Kokubo, Takamasa; Shimokuma, Isao; Takahashi, Haruji; Hirano, Katasuhiku; and Segawa, Masahiro, 3,765,932.

Hirao, Manoru: *See—*
Hijita, Hiromi; and Hirao, Manoru, 3,765,917.

Hirasawa, Masataka: *See—*
Suzuki, Yasoji; and Hirasawa, Masataka, 3,766,408.

Hirata, Hiroshi: *See—*
Higashiyama, Kenji; and Hirata, Hiroshi, 3,766,022.

Hirose, Yoshio: *See—*
Ikeda, Shigeho; Ishi-Zaki, Ayaaki; and Hirose, Yoshio, 3,766,010.

Hirsh Company, The: *See—*
Ferdinand, Irwin J.; and Kulbersh, Irwin R., 3,765,344.

Histed, William N.; and Shaw, Harry, to Gerrard Company, Ltd. Apparatus for side sealing two layers of heat sealable film to complete a package. 3,765,990, Cl. 156-515.000.

Hix, Henry M. Portable baling press. 3,765,323, Cl. 100-100.000.

Hlasnik, Ivan: *See—*
Bronca, Gaston; Lefrancois, Christian; Hlasnik, Ivan; and Pouillange, Jean-Paul, 3,766,502.

Hoadley, Harvey O.: *See—*
Wolfe, Robert N.; Palmer, Beverly F.; Hoadley, Harvey O.; and Van Heyningen, Roger S., 3,765,281.

Hobbins, James F., to Hurst Performance, Inc. Unitary stick transfer case shifter. 3,765,261, Cl. 74-477.000.

Hockin, John; Lund, Carl H.; and Woulds, Michael J., to Martin-Marietta Corporation, mesne. Nickel base alloy. 3,765,879, Cl. 75-171.000.

Hocq, Robert Raymond, to Societe Franco-Hispano-Americaine Francispam. Filling valve for gas-fueled lighter. 3,765,462, Cl. 141-301.000.

Hodan, James J.: *See—*
Dever, James L.; and Hodan, James J., 3,766,303.

Hodgman, Ronald A.: *See—*
Chaplow, Richard A.; and Hodgman, Ronald A., 3,765,910.

Hoesch Aktiengesellschaft: *See—*
Schluter, Wilhelm; Pohler, Heinz; and Hagen, Albert, 3,765,254.

Hoffman, Eric J.; Perschy, James A.; and Elder, Benjamin M., to United States of America, Navy. Frame synchronization detector. 3,766,316, Cl. 178-69.50r.

Hoffmann, Wolfgang, to B. & H. Manufacturing Company, Inc. Labeling apparatus. 3,765,991, Cl. 156-521.000.

Hoffmann-La Roche Inc.: *See—*
Furst, Andor; Koch, Wolfgang; and Uskokovic, Milan Radoje, 3,766,213.
Hausermann, Werner; Kaiser, Ado; and Scheer, Marcel, 3,766,245.
Spector, Sidney, 3,766,162.
Uskokovic, Milan Radoje, 3,766,256.
Uskokovic, Milan Radoje, 3,766,268.

Hokari, Saburo, to Ricoh Co., Ltd. Device for interchangeable lenses for switching between exposure meter operation and manual exposure operation. 3,765,315, Cl. 95-64.00r.

Holcer, Douglas L.: *See—*
Tesdahl, Thomas C.; Holcer, Douglas L.; and Crotty, Homer E., 3,766,068.

Holden, Geoffrey: *See—*
Crossland, Ronald K.; and Holden, Geoffrey, 3,766,295.

Holguin, Amador F.: *See—*
Jabor, Tony; and Holguin, Amador F., 3,765,348.

Hollingsworth, Gordon P., to Minnesota Mining and Manufacturing Company. Wind shield repair. 3,765,975, Cl. 156-94.000.

Holly, James A., to Hollymatic Corporation. Molding apparatus. 3,765,056, Cl. 17-32.000.

Hollymatic Corporation: *See—*
Holly, James A., 3,765,056.

Holophane Company, Inc.: *See—*
Edman, Warren H.; and Patyrak, James W., 3,766,375.

Holotron Corporation: *See—*
Brenden, Byron B., 3,765,403.

Holstein, Stephen A. Disposable cot sheet. 3,765,040, Cl. 5-334.00r.

Holtschmidt, Hans: *See—*
Klauke, Erich; and Holtschmidt, Hans, 3,766,273.

Holtschmidt, Hans; Gold, Heinrich; and Oertel, Gunther, to Bayer Aktiengesellschaft. Isocyanates containing azide groups. 3,766,217, Cl. 260-349.000.

Holub, Fred F.; and Emerick, Carl M., to General Electric Company. Novel bis-imide compositions and polymers therefrom. 3,766,302, Cl. 260-884.000.

Holz, George E.: *See—*
Ogle, James A.; and Holz, George E., 3,766,420.

Homme, Truman K. Telephone alarm system. 3,766,320, Cl. 179-5.00r.

Honda, Makoto; Kozono, Tetsuro; Hirakawa, Keizo; and Sugita, Nobuo, to Asahi Kasei Kogyo Kabushiki Kaisha. Catalyst for preparation of unsaturated nitriles. 3,766,092, Cl. 252-437.000.

Honda, Tadatoshi: *See—*
Yoshimura, Kiyotaka; Asano, Shiro; Honda, Tadatoshi; and Tsuchiya, Ryoji, 3,766,088.

Honerlagen, Hans: *See—*
Menssen, Hans Georg; and Honerlagen, Hans, 3,766,166.

Honeywell Inc.: *See—*
Butter, Charles D., 3,765,750.
Peterson, Dean McCormack; and Veenendaal, Cornelis T., 3,765,756.

Honeywell Information Systems, Inc.: *See—*
Cooper, Stuart B.; and Grandmaison, John P., 3,766,531.
Markowitz, Ivan N.; and Lee, Ernest Paul, 3,766,432.
Nowell, John R., 3,766,433.
Olney, Frederick D., Jr.; Crump, Robert O.; and Kowalski, John L., 3,765,075.
Ripplinger, Roland E., 3,766,475.

Honmaru, Shigeru: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Nagaoka, Yoshihiko; and Zinpo, Kiyokazu, 3,766,265.

Hoober, Daniel; and Frankel, Charles. Jewelry clasp. 3,765,064, Cl. 24-211.000.

Hook, Rollin E.: *See—*
Elias, James A.; and Hook, Rollin E., 3,765,874.

Hooper, Donald F., to Itek Corporation. Apparatus for soldering thick film substrates. 3,765,475, Cl. 165-12.000.

Horgan, William J., Jr., to Blumcraft of Pittsburgh. Panic device for a door. 3,765,198, Cl. 70-92.000.

Horizons Incorporated: *See—*
Quaintance, Harold J.; and Wainer, Eugene, 3,765,994.

Horl, Adolf: *See—*
Bauknecht, Otto; and Horl, Adolf, 3,765,202.

Horn, John W.: *See—*
Rachel, Todd L.; Horn, John W.; and Wertheimer, Harry P., 3,765,380.

Horn, Stuart B., to United States of America, Army. Pneumatic Stirling cycle cooler with non-contaminating compressor. 3,765,187, Cl. 62-6.000.

Horvath, Miklos B.; Etherton, Daniel; and Wilson, Neel, to Synetix Industries. Camera attachment. 3,765,314, Cl. 95-36.000.

Hosokawa, Yoshihiro: *See—*
Yamashita, Sadahiko; Anbe, Toshi; Hosokawa, Yoshihiro; and Nakano, Tomoyasu, 3,766,495.

Hosozawa, Hirosi: *See—*
Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, 3,766,101.

Hotte, Gary D.; and Milligan, Gordon L., to Sperry Rand Corporation. Electromechanical switch. 3,766,501, Cl. 335-190.000.

Hotten, Bruce W., to Chevron Research Company. Extreme pressure lubricating oil additives. 3,766,069, Cl. 252-48.600.

Houdaille Industries, Inc.: *See—*
Achler, Howard S.; and Kaufmann, Harold, 3,765,285.
Schultz, John Clayson, 3,765,445.

Hougen, Everett D. Annular hole cutter. 3,765,789, Cl. 408-204.000.

Howell, Hilda; and Kutz, Walter M., to Koppers Company, Inc. Self-extinguishing polymer compositions containing brominated arylidene ketones. 3,766,136, Cl. 260-45.70r.

Howell, Hilda; and Kutz, Walter M., to Koppers Company, Inc. Brominated cinnamic acid esters. 3,766,249, Cl. 260-476.00r.

Hoyer, Ernst: *See—*
Hahnle, Reinhard; and Hoyer, Ernst, 3,766,164.

Hoyt Corporation: *See—*
Schell, Orville C., 3,765,610.

Hsieh, Edward P.: *See—*
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,766,521.

Huang, Denis K., to Westvaco Corporation. Novel terpolymer containing styrene, acrylonitrile and another acrylic material. 3,766,151, Cl. 260-80.730.

Hubbard, Arthur Lowell; Copley, Russell Dean; and Gannon, Thomas Heral, to Deere & Company. Harvester. 3,765,526, Cl. 198-211.000.

Huber, Hans-Peter: *See—*
Schlagheck, Norbert; Schultes, Herbert; Schneider, Horst; and Huber, Hans-Peter, 3,766,525.

Huber, Horst, to Castagnoli, Sergio J., in care of Moss, Robert E. Continuous casting machine. 3,765,470, Cl. 164-274.000.

Hudnall, Joseph R., to Western Electric Company, Incorporated. Method of making thin film devices. 3,765,937, Cl. 117-212.000.

Hudson, Alan George; and O'Hara, Kevin John, to Coates Brothers & Company Limited. Copolymers prepared by reacting an acrylamide of methacrylamide copolymer with formaldehyde and then with an unsaturated carboxylic acid. 3,766,144, Cl. 260-72.00r.

Hudson, Daniel H.: *See—*
Binasik, Chester S.; Hudson, Daniel H.; and Voorheis, Temple S., 3,765,345.

Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 1-Aminoalkyl-dibenzo-bicycloalkanes and the salts thereof. 3,766,194, Cl. 260-295.50s.

Huff, Terrence: *See—*
Johnson, Burnett H.; and Huff, Terrence, 3,765,948.

Hufnagel, Robert Hughes; Pierce, Lowell Jackson; and Sabol, Edward Joseph, to General Electric Company. Afterburner flameholder. 3,765,178, Cl. 60-261.000.

Hughes Aircraft Company: *See—*
Burnsweig, Joseph, Jr.; and Heimiller, Robert C., 3,766,551.
Gates, Louis E., Jr.; and Lent, William E., 3,765,912.

Huhfeld, Harald: *See—*
Schuller, Wolfgang; and Huhfeld, Harald, 3,766,003.

Hulstander, William L.; Anderson, Gerald L.; and Glover, Charles J., to Dresser Industries, Inc. Plug valve seal. 3,765,646, Cl. 251-183.000.

Hummel, Paul A.: *See—*
Samuels, Joseph P.; Hummel, Paul A.; and Roff, John G., 3,765,755.

Humphrey, Clyde W., 15% to Freeman, William J. and Taylor, Reese. Bloated fly ash aggregates. 3,765,920, Cl. 106-288.00b.

Humphrey, David H. Key holder. 3,765,201, Cl. 70-456.00r.

Humphreys, Robert Lee; and Spitzer, James Edward, to American Can Company. Method and apparatus for trimming and finishing plastic jars. 3,765,785, Cl. 408-1.000.

Hunt, Charles J., to Vulcan Corporation. Injection molding apparatus for plasticized material. 3,765,815, Cl. 425-244.000.

Hunt, Graham R.; and Logan, Lloyd M., to United States of America, Air Force. Calibration technique and apparatus. 3,765,779, Cl. 356-216.000.

Hurlbut, William B., Sr.; and Liebig, Preston D., to Combination Engineering Inc. Method for forming pipe with integral hole or nozzle pattern. 3,765,980, Cl. 156-175.000.

Hurst Performance, Inc.: *See—*
Hobbins, James F., 3,765,261.

Hurst, Vernon J. Viscosity reduction of kaolin by hydrothermal treatment. 3,765,825, Cl. 432-18.000.

Husmann, Surwolf: *See—*
Starck, Axel Von; Husmann, Surwolf; and Gerbig, Hans Erwin, 3,765,798.
Von Starck, Axel; Husmann, Surwolf; Gerbig, Hans-Erwin; and Schnake, Friedrich, 3,765,797.

Huttenwerk Oberhausen Aktiengesellschaft: *See—*
Schierloh, Owe; and Heinrich, Peter, 3,765,869.

Hutzenlaub, Armin S. P.; and Durhager, Paul-Gerhard, to Inta-Roto, Inc. Strip spacing apparatus. 3,765,616, Cl. 242-56.500.

Hwa, Chih M.; and Moran, Ralph T., to Chemed Corporation. Compositions and method for inhibiting scaling in aqueous systems. 3,766,077, Cl. 252-180.000.

Hydro-Med. Sciences, Inc.: *See—*
Arlen, Myron, 3,765,414.

Hyman, Myles; Sheehan, Ronald T.; and Rowland-Hill, Edward W., to Sperry Rand Corporation. Hinged gathering sheet assembly for a corn header. 3,765,157, Cl. 56-119.000.

Hynes Electric Heating Company: *See—*
Koester, George L., Jr., 3,766,357.

I-T-E Imperial Corporation: *See—*
Zocholl, Stanley L., 3,766,436.

Ibata, Yozo, to Nippon Tenshashi Kabushiki Kaisha. Knife with adjustable blade. 3,765,089, Cl. 30-320.000.

Ichida, Takeshige, to Matsushita Electric Industrial Co., Ltd. Pattern generating device. 3,766,528, Cl. 340-172.500.

Ichiki, Minoru; and Ishii, Masahito, to Mitsui Mining & Smelting Co., Ltd. Method of separating metals from waste water. 3,766,035, Cl. 204-149.000.

ICI America, Inc.: *See—*
Wade, Charles Gary, 3,765,964.

Ifune, Saburo: *See—*
Brown, Houston Alfred, Jr.; Keilen, Donald H.; and Ifune, Saburo, 3,766,482.

Igel, John J.: *See—*
Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; and Ulimer, Richard J., 3,765,603.

Ikeda Bussan Company, Limited: *See—*
Sakai, Shoji, 3,765,720.

Ikeda, Fumiaki: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Ikeda, Hidekatsu. Method for moulding protruded shafts as one body. 3,765,217, Cl. 72-334.000.

Ikeda, Shigeho; Ishi-Zaki, Ayaaki; and Hirose, Yoshio, to Ajinomoto Co., Inc. Method for controlling fermentation process. 3,766,010, Cl. 195-30.000.

Ikegami, Toshimasa: *See—*
Ushiyama, Takao; Shinohara, Masato; and Ikegami, Toshimasa, 3,765,162.

Ikegni Tekko Kabushiki Kaisha: *See—*
Sawada, Takehiko, 3,765,811.

Ilnyckyj, Stephan; and Wallace, Thomas Joseph, to Esso Research and Engineering Company. Flow improvers for hydrocarbon oils and method of preparing same. 3,765,849, Cl. 44-62.000.

Imperial Chemical Industries Limited: *See—*
Caunt, Anthony David, 3,766,160.
Nield, Eric; and Rose, John Brewster, 3,766,142.
Watson, Norman Leonard, 3,766,137.

IMS Company: *See—*
Morse, Albert R., 3,765,459.

Industrial Modular Systems Corporation: *See—*
Flint, Alan G., 3,766,046.

Industrial Research Products, Inc.: *See—*
Carlson, Elmer Victor; and Mostardo, August, Jr., 3,766,332.

Industrial Science & Technology, Agency of: *See—*
Kataoka, Shoei; Tateno, Hiroshi; Kawashima, Mitsuo; Komamiya, Yasuo; Morisue, Michitada; and Hashizume, Nobuo, 3,766,372.

Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,765,318.

Industrie Pirelli S.p.A.: *See—*
Calzolari, Pietro; and Longoni, Sergio, 3,766,309.

Inland Steel Company: *See—*
Taylor, Harold L.; Marshall, John M.; and Veslocki, Timothy A., 3,765,660.

Inman, Eric Richard; MacPherson, Alexander; and Stirling, John Andrew, to Ciba-Geigy AG. Azomethine complex pigments. 3,766,230, Cl. 260-438.100.

Innovative Process Equipment, Inc.: *See—*
Shulz, Robert J., 3,765,562.

Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Mimoun, Hubert; De Roch, Irenee Seree; Sajus, Lucien; and Menguy, Pierre, 3,766,232.

Institute of Gas Technology: *See—*
Gregory, Derek P., 3,766,027.

Institutt for Atomenergi: *See—*
Rolstad, Erik; and Jamne, Einar, 3,766,007.

Instrumentation Laboratory, Inc.: *See—*
Blackmer, David E.; and Boling, Eldon A., 3,765,237.

Inta-Roto, Inc.: *See—*
Hutzenlaub, Armin S. P.; and Durhager, Paul-Gerhard, 3,765,616.

Intercan S.A.: *See—*
Nasica, Jean Roger, 3,765,976.

Intercole Automation Inc.: *See—*
Brey, Wilhelm, 3,765,986.
Brey, Wilhelm, 3,765,987.

Intermedcraft Corporation: *See—*
Arnold, Raymond D., 3,766,411.

Intermountain Aviation, Inc.: *See—*
Hammond, Daniel D. Marana, 3,765,711.

International Business Machines Corporation: *See—*
Bean, Donald E.; Engh, James T.; Hammer, James R.; Igel, John J.; Schettl, Myron D.; Tashjian, Harry J.; and Ulimer, Richard J., 3,765,603.
Beausoleil, William F.; and Phelps, Byron E., 3,766,534.
Belloc, Jacques; Choquet, Michel Francois; and Pierre, Jean Marc, 3,766,480.
Black, John C.; Krewson, Neil N.; Tait, John B.; and Updike, Bruce M., 3,766,533.
Boss, David W.; Kemlage, Bernard M.; Lyons, Vincent J.; and Pogge, Hans B., 3,765,960.
Brewer, Richard G.; and Shoemaker, Richard L., 3,766,498.
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,766,521.
Castrucci, Paul P.; and Mason, John W., 3,766,438.
Maring, Blayne E.; Nicholson, James G.; and Rust, Lynn M., 3,766,524.

Martin, Jerry Thomas, 3,765,929.
White, William Frederick, 3,765,542.

International Computer Products, Inc.: *See—*
Johnson, Richard M.; and Jones, John, 3,766,327.

International Harvester Company: *See—*
Luft, Robert G., 3,765,306.

International Nickel Company, Inc., The: *See—*
Hart, Anthony Christopher, 3,766,023.

International Paper Company: *See—*
Usher, francis C., 3,765,419.

International Standard Electric Corporation: *See—*
Vincent, Jean Gabriel; and Thevenin, Claude Gabriel Jean, 3,766,429.

International Telephone and Telegraph Corporation: *See—*
Brown, Houston Alfred, Jr.; Keilen, Donald H.; and Ifune, Saburo, 3,766,482.
Kuechken, John A., 3,766,558.
Menelly, Richard A., 3,766,423.
Rodgers, Paul D., 3,766,481.
Wittman, John P., 3,766,323.

Inukai, Noriyoshi: *See—*
Murakami, Masuo; Inukai, Noriyoshi; and Nagano, Noriaki, 3,766,188.

Ippolito, Amos D.; and Ma, William Y. L., to Environmental Pollution Research Corporation. Compacting system and method of compacting. 3,765,143, Cl. 53-24.000.

Ippolito, Amos D.; and Ma, William Y. L., to Environmental Pollution Research Corporation. Compacting system. 3,765,147, Cl. 53-124.00b.

Ippolito, Amos D.; and Ma, William Y. L., to Environmental Pollution Research Corporation. Containers and liners for use in compacting systems or the like. 3,765,148, Cl. 53-124.00b.

Ireco Chemicals: *See—*
Funk, Albert G.; Hansen, Boyd L.; and Cook, Melvin A., 3,765,967.

Irie, Toshio: *See—*
Hamachi, Kazuo; Shimanaka, Hiroshi; Kawkkami, Tatsuo; Irie, Toshio; and Komoda, Akira, 3,765,957.

Irwin, Gordon A., to Clark Equipment Company. Earth working implement with tripping mechanism. 3,765,492, Cl. 172-266.000.

Isaacs, Anthony Leonard, to Thorn Electrical Industries, Limited. Lighting control system including an analogue to digital converter. 3,766,431, Cl. 315-292.000.

Isaacson, Herbert M., to General Electric Company. Electronic module using flexible printed circuit board with heat sink means. 3,766,439, Cl. 317-100.000.

Isao, Maruyana: *See—*
Kawaski, Akihiro; and Isao, Maruyana, 3,766,153.

Ische, Friedrich: *See—*
Spietschka, Ernst; and Ische, Friedrich, 3,766,190.

Ishi-Zaki, Ayaaki: *See—*
Ikeda, Shigeho; Ishi-Zaki, Ayaaki; and Hirose, Yoshio, 3,766,010.

Ishida, Susumu, to Kabushiki Kaisha Komatsu Seisakusho. Device for automatically adjusting track shoe assembly in crawler tractor. 3,765,730, Cl. 305-10.000.

Ishii, Masahito: *See—*
Ichiki, Minoru; and Ishii, Masahito, 3,766,035.

Isles, Juno: *See—*
Moe, Martin A., Jr.; Isles, Juno; and Dunathan, Jay P., 3,765,372.

Ismail, Roshdy, to Dynamit Nobel Aktiengesellschaft. Film forming polyesters from halogenated phenols, and a mixture of isophthalic and terephthalic acid and electrical insulation of same. 3,766,140, Cl. 260-47.00c.

Isuruta, Yasuo. Controlling method in a transporting machine such as airplane, automobile, etc., and its system. 3,765,466, Cl. 152-210.000.

Itakura, Tatsuo; Shoda, Tetsuo; and Yamamoto, Takashi, to Daiki Engineering Co., Ltd. Electrolytic cell for electrolysis of sea water. 3,766,045, Cl. 204-275.000.

Itaya, Nobushige: *See—*
Ueda, Kenzo; Mizutani, Toshio; Itaya, Nobushige; and Okuno, Yositosi, 3,766,218.

Itek Corporation: *See—*
Hooper, Donald F., 3,765,475.

Ito, Hideichi: *See—*
Yamaguchi, Yuzo; Ito, Hideichi; Watanabe, Susumu; Komatsu, Akira; and Yoshida, Toshio, 3,765,906.

Ito, Ikoh: *See—*
Yurimoto, Juntaro; Ito, Ikoh; Kiku, Takashi; Doi, Toshiki; and Sekihara, Takeshi, 3,766,106.

Ito, Koji: *See—*
Ito, Toshio; Nomaguichi, Tamotsu; Sakai, Masahiro; and Ito, Koji, 3,765,820.

Ito, Osamu: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; and Kato, Takaaki, 3,766,367.

Ito, Roy Atsushi, to RCA Corporation. Communications between central unit and peripheral units. 3,766,530, Cl. 340-172.500.

Ito, Toshio; Nomaguichi, Tamotsu; Sakai, Masahiro; and Ito, Koji, to Mitsubishi Denki Kabushiki Kaisha. Combustion apparatus. 3,765,820, Cl. 431-75.000.

Itoh, Ryosuke, to Sansui Electric Co., Ltd. Speaker apparatus. 3,765,504, Cl. 181-31.00b.

Iwabuchi, Hiroshi: *See—*
Eda, Shinjiro; Iwabuchi, Hiroshi; Yamagishi, Kazuo; and Nakagawa, Keiiti, 3,765,871.

Iwano, Haruhiko; Hayashi, Katsumi; and Matsushita, Sachio, to Fuji Photo Film Co., Ltd. Viscous developer for silver halide diffusion transfer processes. 3,765,892, Cl. 96-66.00r.

Iwase, Kenji: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Iwata, Akira: *See—*
Kawai, Isamu; Nishikawa, Atsuro; Takagi, Osamu; Iwata, Akira; and Sugiyama, Kohei, 3,766,099.

Iwata, Masaharu, to Okuma Machinery Works Ltd. Loader with reversing means. 3,765,545, Cl. 214-1.0bb.

Jabor, Tony; and Holguin, Amador F., to Farah Manufacturing Company, Inc. Zipper patch sewing and forming machine. 3,765,348, Cl. 112-121.110.

Jache, Otto. Accumulator or battery with sulfuric acid electrolyte containing phosphoric acid. 3,765,942, Cl. 136-26.000.

Jackman, Robert M.; and Johnson, Junion L., to Smith, A. O., Inland, Inc. Exothermic composition. 3,766,079, Cl. 252-188.30r.

Jackson, Herman Roy. Drycleaning compositions. 3,766,075, Cl. 252-104.000.

Jackson, Richard W.; and Schulze, John J., to Addressograph-Multigraph Corporation. Micro-image viewer-printer machine optical assembly. 3,765,758, Cl. 355-5.000.

Jacobs, Paul: *See—*
Brocker, John R.; Chapman, Ronald H.; Jacobs, Paul; Johnson, Ronald C.; Powell, Jerry R.; and Peay, Robert L., 3,766,523.

Jacobs, Philip C., Jr., to Chase-Shawmut Company, The. Low-voltage fuse having molded case. 3,766,507, Cl. 337-161.000.

Jaeger, Erich: *See—*
Hampl, Franz, 3,765,245.

Jaeger Machine Company, The: *See—*
Wise, Richard L., 3,765,439.

James, Jack L.: *See—*
Siedband, Melvin P.; and James, Jack L., 3,766,391.

Jamne, Einar: *See—*
Rolstad, Erik; and Jamne, Einar, 3,766,007.

Janeway, Richard: *See—*
Toole, James F.; Barnes, Ralph W., Jr.; and Janeway, Richard, 3,765,406.

Janik, Anton J., to Emerson Electric Co. Cable hoist. 3,765,652, Cl. 254-167.000.

Jankowski, Alfred S.: *See—*
Duffer, Edward F.; Funk, Ernest J.; Jankowski, Alfred S.; Lane, Jack C.; Lehner, William L.; Oliver, Floyd F.; and Schneider, Mark, 3,765,590.

Jannett, Frederick Joseph; and Mracek, Jaroslav, to Western Electric Company, Incorporated. Apparatus for handling and maintaining the orientation of a matrix of miniature electrical devices. 3,765,431, Cl. 134-113.000.

Japanese Geon Company, Ltd., The: *See—*
Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, 3,766,101.

Japanese National Railways Tokyo: *See—*
Baba, Takeshi; Yaku, Tadao; Nakajima, Hisao; Kishimoto, Toshihiko; and Yoshida, Kenichi, 3,766,378.

Jaquiss, Donald B. G.: *See—*
Bialous, Charles A.; and Jaquiss, Donald B. G., 3,766,139.

Jarolim, Vaclav; Slama, Karel; and Sorm, Frantiseh. Epoxidized esters of 5-oxaalkenoic acids. 3,766,220, Cl. 260-348.00a.

Jarvis, John P.: *See—*
Hepp, Otto F.; and Jarvis, John P., 3,766,330.

Jason, George: *See—*
Mc Connell, Frederick C.; Jason, George; and Armstrong, Neil J., 3,765,770.
McConnell, Frederick C.; Jason, George; and Armstrong, Neil J., 3,765,766.
McConnell, Frederick C.; Jason, George; and Armstrong, Neil J., 3,766,312.

Jelinek, Howard J.: *See—*
Maiocco, Joseph; Maiocco, Fred; and Jelinek, Howard J., 3,765,567.

Jeno's Inc.: *See—*
Moline, Roy Virgil, 3,765,909.

Jensen, Robert: *See—*
Hay, William D.; and Jensen, Robert, 3,766,470.

Jespersen, Herbert A., to Outboard Marine Corporation. All-terrain vehicle. 3,765,258, Cl. 74-243.00r.

Jet Research Center, Inc.: *See—*
Reed, William Carroll; and Livingston, Kenneth Bratton, 3,765,333.

Johannes, Conrad: *See—*
De Roissart, Henri; and Johannes, Conrad, 3,765,904.

Johansson, Jarl; and Urnquist, Jan. Process for the catalytic amination of aliphatic alcohols, aminoalcohols and mixtures thereof. 3,766,184, Cl. 260-261.50y.

Johansson, Lennart J. I.; Andersson, Sven E.; and Eliasson, Jan A., to Forenade Fabriksverken. Safety lock for breech opening for firearms. 3,765,115, Cl. 42-1.00n.

Johns-Manville Corporation: *See—*
Thomas, Joseph John, 3,765,979.

Johnson, Bernard A.: *See—*
Voda, Edward R.; and Johnson, Bernard A., 3,766,451.

Johnson, Burnett H.; and Huff, Terrence, to Esso Research and Engineering Company. Rewettable battery separator. 3,765,948, Cl. 136-146.000.

Johnson, Charles W. Garbage grinder stuffer. 3,765,275, Cl. 81-1.00r.

Johnson, Dale Richard, to Norfin, Inc. Retainer for sheet transfer in sorting machine. 3,765,670, Cl. 270-58.000.

Johnson, David W., to Arrow-Hart, Inc. Two part casing for trigger switch with one part mounting all switch contact members. 3,766,348, Cl. 200-157.000.

Johnson, Francis B., to United States of America, Navy, mesne. High resolution aircraft radar antenna. 3,766,561, Cl. 343-705.000.

Johnson, Howard R., to Kelsey-Hayes Company. Friction lining composition containing fluorocarbon particles. 3,766,130, Cl. 260-41.00a.

Johnson, Junion L.: *See—*
Jackman, Robert M.; and Johnson, Junion L., 3,766,079.

Johnson, Maurice Vivian, to Wall & Leigh Thermoplastics Limited. Frictional connecting devices. 3,765,054, Cl. 16-140.000.

Johnson, Paul C.; Lilland, Larry L.; and Siemon, Earl L., to Berkley & Company, Inc. Cane pole reel. 3,765,618, Cl. 242-84.10r.

Johnson, Richard M.; and Jones, John, to International Computer Products, Inc. Tape cassette holding and positioning unit. 3,766,327, Cl. 179-100.20z.

Johnson, Ronald C.: *See—*
Brocker, John R.; Chapman, Ronald H.; Jacobs, Paul; Johnson, Ronald C.; Powell, Jerry R.; and Peay, Robert L., 3,766,523.

Johnston, Furnie W. Femoral hip prosthesis with positioning and drill guide assembly. 3,765,034, Cl. 3-1.000.

Joice, Richard L. Bag bottom construction. 3,765,309, Cl. 93-35.0sb.

Jones, Cecil R., to Transfer Systems Incorporated. Apparatus and method for loading nuclear fuel into a shipping cask without immersion in a pool. 3,765,549, Cl. 214-18.00n.

Jones, John: *See—*
Johnson, Richard M.; and Jones, John, 3,766,327.

Jones, John Leslie, Sr. Optimum profile absorbent diaper pad. 3,765,418, Cl. 128-287.000.

Jonville, Christian Pierre: *See—*
Conroux, Jean-Jacques; Jonville, Christian Pierre; and Zurcher, Erwin Alair, 3,765,193.

Jordon, Wesley A.; and Carter, Walter H., to General Mills Chemicals, Inc. Blends of xanthomonas and guar gum. 3,765,918, Cl. 106-205.000.

Joyce, Arthur B., to Tyrone Hydraulics, Inc. Dump truck pump. 3,765,807, Cl. 418-191.000.

Juhasz, Lajos, to Konzerv-Es Paprikaipari Kutatointezet. Positive displacement pump. 3,765,805, Cl. 418-68.000.

Junginger, Klaus, to Original Hanau Quarzlampen GmbH. Floodlighting system and spotlights therefor. 3,766,377, Cl. 240-41.150.

Junker, Arnold E., to Avco Corporation. High speed shaft centrifuge fluid seal. 3,765,688, Cl. 277-14.000.

Juntgen, Harald; and Knoblauch, Karl, to Bergwerksverband GmbH. Process for regenerating active carbon loaded with sulfuric acid. 3,766,090, Cl. 252-413.000.

Jurenz, Rolf; and Kodalle, Horst, to VEB Pentacon Dresden Kamera- und Kinowerke. Optical system. 3,765,310, Cl. 95-10.00r.

K. & M. Rubber Co.: *See—*
Meier, Ernie A.; and Micallef, Alfred M., 3,765,400.

K-G Industries, Inc.: *See—*
Harris, Leroy S., 3,765,173.

Kabushiki Kaisha Kawai Tosando: *See—*
Kawai, Kiyoshi, 3,765,408.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Ishida, Susumu, 3,765,730.

Kabushiki Kaisha Oji Yuka Goseishi Kenkyujo: *See—*
Toyoda, Takashi, 3,765,999.

Kabushiki Kaisha Suwa Seikosha: *See—*
Kurita, Hirohisa; Fujimori, Hiroaki; and Fujisawa, Yasuo, 3,765,166.
Ushiyama, Takao; Shinohara, Masato; and Ikegami, Toshimasa, 3,765,162.

Kagata, Tooru, to Aisin Seiki Kabushiki Kaisha. Free wheel hub mechanism. 3,765,521, Cl. 192-35.000.

Kahr, Kurt: *See—*
Peck, Fritz; Fuchs, Hugo; Kahr, Kurt; and Wunsch, Gerd, 3,766,038.

Kaiser, Ado: *See—*
Hausermann, Werner; Kaiser, Ado; and Scheer, Marcel, 3,766,245.

Kaldnes Mek Verkated A/S: *See—*
Eide, Torvald, 3,765,358.

Kalle Aktiengesellschaft: *See—*
Bauer, Sigrid; Brahm, Richard; and Dietrich, Roland, 3,765,898.

Kamienski, Conrad W.; and Eastham, Jerome F., to Lithium Corporation of America. Diorganomagnesium reagents and methods of preparing same. 3,766,280, Cl. 260-665.00r.

Kan, Peter T.: *See—*
Patton, John T., Jr.; Cenker, Moses; and Kan, Peter T., 3,766,103.

Kane, Michael: *See—*
Green, Donald; Kane, Michael; and Sullivan, James P., 3,765,049.

Kaneko, Hisashi: *See—*
Aaron, Marvin Robert; Kaneko, Hisashi; and Osborne, Paul Wray, 3,766,546.

Kaneko, Tokuzo: *See—*
Sato, Shoi; Sakamoto, Eiichi; Watanabe, Yuji; Sakazume, Kaiichiro; and Kaneko, Tokuzo, 3,765,899.

Kaniuka, Walter W., to United States of America, Navy. Fluidically augmented variable gain artificial feel system. 3,765,624, Cl. 244-83.00r.

Kanpp, Heinrich, to Bosch, Robert, G.m.b.H. Fuel injection apparatus. 3,765,387, Cl. 123-119.00r.

Kantebet, Kishore V.: *See—*
West, Robert E.; and Kantebet, Kishore V., 3,765,534.

Kapp, Ernst: *See—*
Rudolph, Paul; and Kapp, Ernst, 3,765,167.

Karpenko, Anatole N., to Anchor Equipment Company d/b/a Anchor Valve Company. Chemical cleaning line connector. 3,765,456, Cl. 138-89.000.

Kashara, Tadashi: *See—*
Kimura, Yoshiaki; Kawai, Masanori; and Kashara, Tadashi, 3,765,741.

Kasik, Robert L.; and Ludsas, Anthony J., to Beatrice Foods Co. Cheese product. 3,765,905, Cl. 426-43.000.

Kaspers, Helmut: *See—*
Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, 3,766,243.

Kassees, Kamil S.: *See—*
Barber, Walter W.; Kassees, Kamil S.; and Rushing, James M., 3,765,692.

Kassner, Karl-Heinz, to Henkel & Cie G.m.b.H. Adducts of triglycidyl isocyanurate with novolaks able to form cross-links. 3,766,296, Cl. 260-831.000.

Katakabe, Kyoku: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Kataoka, Shoei; Tateno, Hiroshi; Kawashima, Mitsuo; Komamiya, Yasuo; Morisue, Michitada; and Hashizume, Nobuo, to Industrial Science & Technology, Agency of. Method of controlling high electric field domain in bulk semiconductor. 3,766,372, Cl. 235-175.000

Kato, Takaaki: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; and Kato, Takaaki, 3,766,367.

Katoh, Shigeo, to Victor Company of Japan, Ltd. Device for cutting off the signal in a recorder at the end of recording. 3,766,329, Cl. 179-100.20r.

Katsuki, Hiroshi: *See—*
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Kawabata, Norio; Kimpara, Nobuyuki; and Takata, Manabu, to Matsushita Electric Industrial Co., Ltd. Forced suction and exhaust type gas burner apparatus. 3,765,823, Cl. 431-157.000.

Kawaguchi, Ltd.: *See—*
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Kawai, Isamu; Nishikawa, Atsuro; Takagi, Osamu; Iwata, Akira; and Sugiyama, Kohei. Process for preparation of ethylenic resin foam. 3,766,099, Cl. 260-2.50e.

Kawai, Kiyoshi, to Kabushiki Kaisha Kawai Tosando. Soft obstetric vacuum cup for assisting childbirth. 3,765,408, Cl. 128-352.000.

Kawai, Masanori: *See—*
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Kawaski, Akihiro; and Isao, Maruyana, to Maruzen Petrochemical Co., Ltd. Process for preparing alternating copolymer of butadiene and alpha-olefine and novel alternating copolymer of butadiene and alpha-olefine containing cis-configuration butadiene unit. ,766,153, Cl. 260-84.100.

Kawkkami, Tatsuo: *See—*
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Kazmarek, Edward: *See—*
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Keck, Klaus. Apparatus for transferring separate liquid fractions into separate fraction vessels. 3,765,461, Cl. 141-234.000.

Keilen, Donald H.: *See—*
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Keir, Alexander S., to Texas Instruments, Incorporated. Fluid level detection system. 3,766,395, Cl. 250-214.00r.

Kell, Nathaniel B., to General Motors Corporation. Piston and retraction spring subassembly. 3,765,519, Cl. 188-366.000.

Keller, Ernst: *See—*
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Kemp, Norman H. Sealing apparatus. 3,765,560, Cl. 220-46.00r.
Ken Hayashibara: *See—*
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Kerschner, Paul M.: *See—*
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Kerst, Al F.; Douros, John D., Jr.; and Brokl, Milan, to Gates Rubber Company, The. Controlling algae with 5-(5 barbituriliidene)-rhodanine. 3,765,864, Cl. 71-67.000.
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Killoren, John J.; and Rubinate, Frank J., to United States of America, Army. Blocking microleaks in flexible food packages. 3,765,907, Cl. 426-410.000.
Kim, Jong An. Disposable tobacco cartridge with tamper. 3,765,423, Cl. 131-3.000.
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Kine, Benjamin B.; and Emmons, William D., to Phillips Petroleum Company. Unsaturated quaternary monomers and polymers. 3,766,150, Cl. 260-86.10n.
Kine, Benjamin B.; and Emmons, William D., to Rohm & Haas Company. Unsaturated quaternary monomers and polymers. 3,766,156, Cl. 260-86.10n.
Kinedyne Corporation: *See—*
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Kirspel, Robert Franklin, 1/2 to Schubat, Eric. Body shaping tool and accessory. 3,765,220, Cl. 72-460.000.
Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dangsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. Hydroxamic acid derivatives of alpha-aminooxy-carboxylic acids. 3,766,235, Cl. 260-453.00r.
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Klebe, Johann F.; and Windish, Thomas J., to General Electric Company. Imido-alkylene substituted aromatic carbocyclic polymers. 3,766,294, Cl. 260-780.00a.
Klemm, Richard A.: *See—*
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Knight, Donald L., to Goodyear Tire & Rubber Company, The. Method of making a pneumatic tire. 3,765,977, Cl. 156-128.000.
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Koester, George L., Jr., to Hynes Electric Heating Company. High power factor pipe heater. 3,766,357, Cl. 219-300.000.
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Kohlmannsperger, Josef, to Agfa-Gevaert Aktiengesellschaft. Method and apparatus for drying wet surfaces. 3,765,099, Cl. 34-1.000.
Kohn, Roger Louis, to Bell Telephone Laboratories, Incorporated Dye laser with pump cavity mode matched to laser resonator. 3,766,488, Cl. 331-94.500.
Kokubo, Takamasa; Shimokuma, Isao; Takahashi, Haruji; Hirano, Katasuhiku; and Segawa, Masahiro, 1/2 to Shinko-Pfaudler Company, Limited and 1/2 to Kuseha Kagaku Kogyo Kabushiki Kaisha. Method for anti-corrosive coating. 3,765,932, Cl. 117-132.0cf.
Kolehmainen, Jack A.; and Lemieux, George E., to Ford Motor Company. Dual diaphragm actuator for a transmission throttle valve assembly. 3,765,272, Cl. 74-863.000.
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Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, to Japanese Geon Company, Ltd., The and Osaka Soda Co., Ltd. Process for the polymerization of alkylene oxide and catalyst therefor. 3,766,101, Cl. 26-2.00a.
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Koyangi, Shunichi; and Tajima, Shigenobu, to Shinetsu Chemical Company. Method for controlling the reaction rate in the suspension-polymerization of vinyl chloride. 3,766,159, Cl. 260-92.80w.
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Krauss, Hans Gunter, to Elmeg Elektro-Mechanik GmbH. Axial guide for transfer pinions and digit drums in counters. 3,766,366, Cl. 235-133.000.
Krecioch, Theodore H.; and Pyzer, Laurence J., to National Cash Register Company, The. Coded data sensing system. 3,766,364, Cl. 235-61.11e.
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Kubacki, Edward Frank; and Timmins, William Dean, to American Can Company. Method and apparatus for beading, necking-in and flanging metal can bodies. 3,765,351, Cl. 113-120.0aa.
Kubicek, Louis A., to Burr-Ban Tool Service Company. Tool holder. 3,765,790, Cl. 408-226.000.
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Langstroth, Theodore A.; and Neave, Arthur S., Jr., to Sterling Drug Inc. Fluorescent whitening compositions. 3,766,083, Cl. 252-301.20w.

Larrick, Benjamin F., to United States of America, Navy. Electro-ionic method of strengthening glass. 3,765,855, Cl. 65-30.000.

Larsen, Richard K.: *See—*
Buscher, Richard G.; Davis, Richard L.; Kazmarek, Edward; and Larsen, Richard K., 3,765,263.

Larson, Willis A.; and Warner, Raymond M., Jr., to Magic Dot, Inc., mesne. Composite D.C. amplifier for use with a touch sensitive electronic switch. 3,766,404, Cl. 307-116.000.

Lasker, Sigmund E.; and Chiu, Marie L., to Research Corporation. Orally active anti-coagulant. 3,766,167, Cl. 260-211.00r.

Latash, Jury Vadimovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Ebedev, Vladimir Konstantinovich; Baglay, Vitaly Michailovich; Bondarenko, Oleg Petrovich; Sidorenko, Michail Nikolaevich; and Bogachenko, Alexey Georgievich, 3,765,471.

Latinen, George A.; deceased (by Latinen, May V.; administratrix), to Monsanto Company. Mixing process. 3,765,655, Cl. 259-9.000.

Latinen, May V.: *See—*
Latinen, George A., 3,765,655.

Lau, Dicksen T. W. Versatile mobile home. 3,765,714, Cl. 296-23.00r.

Lauck, Helmut, to Varta Aktiengesellschaft. Method of producing a gel containing concentrated sulfuric acid. 3,765,950, Cl. 136-158.000.

Lauer, Richard E., to General Electric Company. Apparatus and method for developing winding coils. 3,765,080, Cl. 29-596.000.

Laughlin, Arvine E., to United States Steel Corporation. Articulated puller arm. 3,765,617, Cl. 242-79.000.

Laurentie, Michel: *See—*
Siard, Michel; and Laurentie, Michel, 3,765,985.

Le Diouron, Raymond, to L'Air Liquide Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Method and apparatus for deep-freezing. 3,765,189, Cl. 62-71.000.

Le Nabour, Marcel: *See—*
Bourgain, Louis; Dreyfus, Gaspard; Le Nabour, Marcel; and Rouquie, Georges, 3,765,735.

Lear Siegler, Inc.: *See—*
Anthony, Russell W.; Motz, Carl H.; and Tersch, Richard W., 3,765,129.
Buscher, Richard G.; Davis, Richard L.; Kazmarek, Edward; and Larsen, Richard K., 3,765,263.

LeBlond Inc.: *See—*
Hentz, Thomas E.; and Burroughs, Robert K., 3,766,460.

Lecourt, Jean Albert, to Saint-Gobain Industries. Flotation process and apparatus for making glass. 3,765,857, Cl. 65-91.000.

Ledner, Albert C. Thermal-gravity fluid pumping method and apparatus. 3,765,799, Cl. 417-53.000.

Lee, Ernest O., Jr.: *See—*
Budrys, Ignas; Lee, Ernest O., Jr.; and Pharis, William W., 3,766,324.

Lee, Ernest Paul: *See—*
Markowitz, Ivan N.; and Lee, Ernest Paul, 3,766,432.

Lee, Henry L., Jr.; Stoffey, Donald G.; Stang, Albert F.; and Oblowski, Jan Alexander, to Lee Pharmaceuticals. Diacrylate esters of low viscosity and the use thereof as binders in dental restorative compositions. 3,766,132, Cl. 260-41.00a.

Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., to Stauffer Chemical Company. Certain geranyl ethers. 3,766,208, Cl. 260-327.00m.

Lee Pharmaceuticals: *See—*
Lee, Henry L., Jr.; Stoffey, Donald G.; Stang, Albert F.; and Oblowski, Jan Alexander, 3,766,132.

Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Sung Ki, to Andco Incorporated. Electrochemical processes for the removal of contaminants from aqueous media. 3,766,037, Cl. 204-152.000.

Leenhouts, Albert C., to Superior Electric Company, The. Backlash compensation circuit for numerically controlled stepping motor driven machine. 3,766,461, Cl. 318-630.000.

Leeson, Patrick George. Speed changing mechanism. 3,765,253, Cl. 74-55.000.

Lefrancois, Christian: *See—*
Bronca, Gaston; Lefrancois, Christian; Hlasnik, Ivan; and Pouillange, Jean-Paul, 3,766,502.

Leggingwell, James W.; Thies, Curt; and Werkmeister, Dennis W., to National Cash Register Company, The. Process for etching polymeric films. 3,765,968, Cl. 156-7.000.

Legille, Edouard; and Mailliet, Pierre, to S. A. des Anciens Etablissements Paul Wurth. Clay guns for blast furnaces. 3,765,663, Cl. 266-72.000.

Lehner, William L.: *See—*
Duffer, Edward F.; Funk, Ernest J.; Jankowski, Alfred S.; Lane, Jack C.; Lehner, William L.; Oliver, Floyd F.; and Schneider, Mark, 3,765,590.

Lehureau, Jean; and Bourdon, Louis. Method for the protection against aquatic parasites. 3,765,933, Cl. 117-132.00r.

Leifermann, Walter. Method and apparatus for automatically metering predetermined volumina of a liquid. 3,765,568, Cl. 222-56.000.

Leitermann, Wolf; and Maurhoff, Gerhard, to Audi NSU Auto Union Aktiengesellschaft. Feed and proportioning pump. 3,765,802, Cl. 417-395.000.

Lejuene, Daniel, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Device for filling tubeless tires with a liquid. 3,765,469, Cl. 152-415.000.

Lemieux, George E.: *See—*
Kolehmainen, Jack A.; and Lemieux, George E., 3,765,272.

Lemieux, George E., to Ford Motor Company. Multiple ratio power transmission mechanism with an infinitely variable overdrive range. 3,765,270, Cl. 74-690.000.

Lemieux, Raymond Urgel; and Raap, Rintoe, to R & L Molecular Research Ltd. Certain 7-(o-aminomethyl-phenylacetamido) -3-[heterocyclylthio)methyl]ceph-3-em-4-carboxylic acids. 3,766,175, Cl. 260-243.00c.

Lemieux, Raymond Urgel; and Raap, Rintoe, to R & L Molecular Research Ltd. Certain 7-(o-aminomethylphenyl-trioacetamido) -3-[heterocyclylthio)methyl]ceph-3-em-4-carboxylic acids. 3,766,176, Cl. 260-243.00c.

Lemper, Herbert, to Mesta Machine Company. Frameless roll leveler, straightener and the like. 3,765,210, Cl. 72-164.000.

Lent, William E.: *See—*
Gates, Louis E., Jr.; and Lent, William E., 3,765,912.

Leonhart, Charles J.; and Lewandowski, Edward W., to Nuarc Company, The. Copy camera. 3,765,761, Cl. 355-62.000.

Lepar, Edwin. Equipment for rectally administering enemas. 3,765,413, Cl. 128-245.000.

Lesser, Jerome M. Automatic car wash. 3,765,043, Cl. 15-97.00r.

Levine, Morris Meyer; and Cake, Arthur Fischer, to Uranus Electronics Inc. Electronic timepiece. 3,765,163, Cl. 58-50.00r.

Lewandowski, Edward W.: *See—*
Leonhart, Charles J.; and Lewandowski, Edward W., 3,765,761.

Lewis, Ernest E., to Gainesville Machine Company, Inc. Method and apparatus for killing poultry or other fowl. 3,765,055, Cl. 17-11.000.

Ley, William H.: *See—*
Opal, Kenneth E.; and Ley, William H., 3,766,497.

LFE Corporation: *See—*
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Li, Chou H. Solid-state device. 3,765,956, Cl. 148-33.000.

Licentia Patent-Verwaltungs G.m.b.H.: *See—*
Erkens, Wilhelm, 3,766,005.

LiDonnici, Kenneth. Copying machine. 3,765,762, Cl. 355-78.000.

Liebel, John T., Jr., to Nanodata Corporation. Data processing system having two levels of program control. 3,766,532, Cl. 340-172.500.

Liebig, Preston D.: *See—*
Hurlbut, William B., Sr.; and Liebig, Preston D., 3,765,980.

Lifferth, Henry R. Hoist. 3,765,651, Cl. 254-186.0hc.

Liggett & Myers Incorporated: *See—*
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Lilingsfeld, Heinz: *See—*
Martwig, Ernst; Ackelmann, Otto; and Lilingsfeld, Heinz, 3,766,222.

Lilland, Larry L.: *See—*
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Lilly, Eli, and Company: *See—*
Beck, James R., 3,766,187.
Emmick, Thomas L., 3,766,209.
Szinai, Stephen Slomo; and Chakrabarti, Jiban Kumar, 3,766,262.
Webber, J. Alan; and Van Heyningen, Earle M., 3,766,177.

Limpens, Karl: *See—*
Glindmeyer, Friedrich; Hennenberg, Wilhelm; and Limpens, Karl, 3,765,457.

Lin, Chau-Han; and Wright, Arthur J., to National Cash Register Company, The. Benzopyran compounds. 3,766,214, Cl. 260-343.300.

Lin, Heh-Sen, to LFE Corporation. Corona device. 3,766,382, Cl. 250-324.000.

Lindaberry, Harold L., to Pennwalt Corporation. Control of aquatic plant life. 3,765,863, Cl. 71-66.000.

Lindblom, Robert O.: *See—*
Taplin, William H., III; Lindblom, Robert O.; and Caskey, Terry L., 3,765,944.

Lindquist, Steven M.; Baker, Kenneth A.; Harris, Elmer E.; and Wineberg, Kenneth W., to Heinz, H. J., Company. Method and apparatus for aseptically filling drums. 3,765,142, Cl. 53-11.000.

Lionweld Limited: *See—*
Mudd, Derek Percival, 3,765,136.

Liquid Nitrogen Processing Corporation: *See—*
Arkles, Barry C., 3,766,131.

List, Hans: *See—*
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Litchfield, Hart S.: *See—*
Smith, Arthur A.; Christensen, Dean E.; Campbell, Billy H.; Strickland, Raymond I.; Lopez, Bennie F.; Eckstein, Herbert P.; and Litchfield, Hart S., 3,765,752.

Lithium Corporation of America: *See—*
Kamienski, Conrad W.; and Eastham, Jerome F., 3,766,280.

Littiken, Darrell E.: *See—*
Caudill, Clarence D. J., 3,765,633.

Little, Edwin D.: *See—*
Mathew, Chempolil T.; Ulmer, Harry F.; Little, Edwin D.; and Curtis, Omer E., Jr., 3,766,204.

Littmann, Joseph C., to American Safety Equipment Corporation. Reusable and automatically resettable energy dissipating device. 3,765,700, Cl. 280-150.0sb.

Litvin, Robert L.: *See—*
Litvin, Robert L.; and Spadaro, Giorgio I., 3,765,139.

Litvin, Robert L.; and Spadaro, Giorgio I., 54% to Litvin, Robert L. and 46% to Marino, Louis L. Modular construction for bathrooms. 3,765,139, Cl. 52-205.000.

Litzinger, Elmer F., to Allied Chemical Corporation. Herbicidal diphenyl-N-(chlorophenoxy-acetyl)-thiazone imines and a process for their preparation. 3,766,201, Cl. 260-306.80r.

Liu, Hsin-Ching: *See*—
Guu, Biing-Yan; and Liu, Hsin-Ching, 3,765,780.

Livingston, Kenneth Bratton: *See*—
Reed, William Carroll; and Livingston, Kenneth Bratton, 3,765,333.

Livingston, William L., to Factory Mutual Research Corporation. Double rate flow controller. 3,765,446, Cl. 137-504.000.

Liwa, Shieu Shin, to Mutron Industries, Ltd. Polyvinyl acetate balloon making system. 3,766,108, Cl. 260-23.00r.

Lobbe, Armin; and Rafael, Werner, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installations. 3,765,723, Cl. 299-34.000.

Lockwood, James F. Automatic intermittent break-up device. 3,765,608, Cl. 239-230.000.

Logan, Lloyd M.: *See*—
Hunt, Graham R.; and Logan, Lloyd M., 3,765,779.

Logue, George E. Combined loader bucket and fines separator. 3,765,490, Cl. 171-132.000.

Lohmer, Karl, to Agfa-Gevaert Aktiengesellschaft. Polymeric acid containing gelatin interlayer for color photographic film. 3,765,893, Cl. 96-74.000.

Lohr, Raymond J.: *See*—
Kienholz, Charles M.; and Lohr, Raymond J., 3,765,396.

Loix, Gilbert. Prefabricated metal staircase. 3,765,137, Cl. 52-182.000.

London Oil Refining Company: *See*—
Knowles, Ernest; and Fixman, Jack, 3,765,911.

Longoni, Sergio: *See*—
Calzolari, Pietro; and Longoni, Sergio, 3,766,309.

Longstaff, Fred McColl; and Petrie, John Malcolm, to ESE Limited. Telephone line voltage sensing circuit. 3,766,335, Cl. 179-175.300.

Lopez, Bennie F.: *See*—
Smith, Arthur A.; Christensen, Dean E.; Campbell, Billy H.; Strickland, Raymond I.; Lopez, Bennie F.; Eckstein, Herbert P.; and Litchfield, Hart S., 3,765,752.

Lord Corporation: *See*—
Herbst, Paul T.; and Bergman, Lawrence A., 3,765,631.

Lordel Manufacturing Services, Inc.: *See*—
Hatfield, William C.; and Reed, John M., 3,766,325.

Lorette, Nicholas B., to Dow Chemical Company, The. Preparation of norbornenes. 3,766,283, Cl. 260-666.0py.

Loro, Albert, to Microsystems International, Limited. Joining conductive elements on microelectronic devices. 3,766,308, Cl. 174-68.500.

Loudon, Donald C.; and Bernhardt, Herman E., to Bendix Corporation, The. Solid state breakerless ignition system for internal combustion engines. 3,765,390, Cl. 123-148.00e.

Lourigan, George Henry: *See*—
Readshaw, Ronald Louis; and Lourigan, George Henry, 3,765,836.

Lowe, Robert A. Adjustable nozzle assembly. 3,765,317, Cl. 98-40.00a.

Lowry, Ray H., to United States of America, Navy. Backscatter reduction apparatus. 3,766,478, Cl. 325-65.000.

LTV Aerospace Corporation: *See*—
Barber, Walter W.; Kassees, Kamil S.; and Rushing, James M., 3,765,692.

Lubrizol Corporation, The: *See*—
McMillen, Richard Leo, 3,766,066.
McMillen, Richard Leo, 3,766,067.

Lucas, Anthony A.; and Pisano, Frank T., to United States of America, Army. Load limiting mechanism. 3,765,260, Cl. 74-405.000.

Lucas, Joseph, (Industries) Limited: *See*—
Cryer, Edward, 3,766,351.
Nevett, Leslie James, 3,766,344.
Poulson, Howard; and Dockerill, Ian Anthony, 3,765,218.

Luce, Robert L.; and Schlegel, Earl S., to General Instrument Corporation. Integrated IGFET circuits with increased inversion voltage under metallization runs. 3,766,448, Cl. 317-235.00r.

Ludsas, Anthony J.: *See*—
Kasik, Robert L.; and Ludsas, Anthony J., 3,765,905.

Luft, Robert G., to International Harvester Company. Steering cylinder. 3,765,306, Cl. 92-117.00a.

Lugovsky, Vladimir Ivanovich: *See*—
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moislevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.

Luhrig, Hermann; Taeffner, Klaus; Pohl, Gunther; Schmitz, Gerhard; and Kreit, Rudolf, to Agfa-Gevaert Aktiengesellschaft. Tabulator punch. 3,765,290, Cl. 83-558.000.

Lund, Carl H.: *See*—
Hockin, John; Lund, Carl H.; and Woulds, Michael J., 3,765,879.

Lund, Norman W.: *See*—
Kilbane, James A., Jr., 3,765,731.

Lundback, Bertil, to Allmanna Svenska Elektriska Aktiebolaget. Die for hydrostatic extrusion of sections having elongated projections. 3,765,222, Cl. 72-467.000.

Lux, Adalbert A., to Xerox Corporation. Fusing apparatus. 3,765,828, Cl. 432-233.000.

Lykke, Gravs Larsen. Radio noise filter. 3,766,500, Cl. 333-79.000.

Lyman, Richard E., to United States Steel Corporation. Pressurized tiltable tundish construction. 3,765,571, Cl. 222-166.000.

Lyon, John Bennett; and Yang, Hung Han, to Du Pont de Nemours, E. I., and Company. Apparatus for extruding thermoplastic tubing. 3,765,808, Cl. 425-72.000.

Lyons, Vincent J.: *See*—
Boss, David W.; Kemlage, Bernard M.; Lyons, Vincent J.; and Pogge, Hans B., 3,765,960.

M & J Development Company: *See*—
Grove, Marvin H.; and Kim, Kee W., 3,765,647.

M & J Valve Company: *See*—
Grove, Marvin H.; Kim, Kee W.; and Van Arsdale, Lyle R., 3,765,440.
Grove, Marvin H.; and Kim, Kee W., 3,765,647.

M. S. E. Holdings Limited: *See*—
Baker, Peter James, 3,765,601.

Ma, William Y. L.: *See*—
Ippolito, Amos D.; and Ma, William Y. L., 3,765,143.
Ippolito, Amos D.; and Ma, William Y. L., 3,765,147.
Ippolito, Amos D.; and Ma, William Y. L., 3,765,148.

Mac Donald, William, to Vernon Instruments Company Limited. Signal indicator systems. 3,766,474, Cl. 324-99.00d.

MacFarlane, John, to Bross, Theodore D., Line Construction Corporation, The. A.C. powered surveillance system. 3,766,537, Cl. 340-276.000.

Mach, Richard L.; Studley, Edward; and Haas, Thomas W., to American Standard, Inc. Plastic molding process. 3,766,186, Cl. 264-269.000.

Machine Tools Limited: *See*—
Firth, Arthur Jose, 3,765,259.

Machlett Laboratories, Incorporated, The: *See*—
Singer, Barry M., 3,766,422.

MacKay, Patrick W.: *See*—
Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,765,872.

Mackey, Charles R.; and Stein, Harold A., to Carborundum Company, The. Free cutting internal diamond grinding wheel. 3,765,132, Cl. 51-206.00r.

MacLaren, Richard O.; and Breazeale, Jack D., to United Aircraft Corporation. Method for generating a noncondensible gaseous fluid compatible with interhalogen oxidizers using phosphonitrilic chloride. 3,765,174, Cl. 60-220.000.

Macomber, Louis Everett. Equine semen extender. 3,766,008, Cl. 195-1.800.

MacPherson, Alexander: *See*—
Inman, Eric Richard; MacPherson, Alexander; and Stirling, John Andrew, 3,766,230.

Madey, Marion J.; and Groneman, Norman A., to Poster Products, Inc. Structural units and method of assembling them. 3,765,541, Cl. 211-182.000.

Maesaka, Tomio: *See*—
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Magee, Harry H. Resilient cattle identification tag. 3,765,113, Cl. 90-300.000.

Magic Dot, Inc., mesne: *See*—
Larson, Willis A.; and Warner, Raymond M., Jr., 3,766,404.

Magnavox Company, The: *See*—
Anweiler, Donald M., 3,765,053.
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Magnion Inc., in care of Kane, Michael: *See*—
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Maheux, Peter Francis: *See*—
Van Dyk, Robert Maarten; and Maheux, Peter Francis, 3,766,350.

Mahler, Walter; and Panar, Manuel, to Du Pont de Nemours, E. I., and Company. Decorative iriscent compositions. 3,766,061, Cl. 252-1.000.

Mailliet, Pierre: *See*—
Legille, Edouard; and Mailliet, Pierre, 3,765,663.

Maiocco, Fred: *See*—
Maiocco, Joseph; Maiocco, Fred; and Jelinek, Howard J., 3,765,567.

Maiocco, Joseph; Maiocco, Fred; and Jelinek, Howard J. Fluid dispensing data processing system. 3,765,567, Cl. 222-30.000.

Maiorino, Giuseppe, to FMI-Mecfond-Aziende Meccaniche Riunite S.p.A. Pneumatic conveying device controlled by an electronic programmer for machines for working stacked sheet material. 3,765,284, Cl. 83-71.000.

Majesko, George A.: *See*—
Gottlieb, Arnold J.; and Majesko, George A., 3,765,846.

Makita, Minoru: *See*—
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Malarkey, Edward C.; Natale, Michael R.; and Ogland, Jon W., to Westinghouse Electric Corporation. Method of preparing an ultraviolet emitting phosphor. 3,766,084, Cl. 252-301.60f.

Mallory, P. R., & Co., Inc.: *See*—
Pearce, Godfrey R.; and Breeden, William J., 3,766,442.

Maly, George P., to Union Oil Company of California. Method and apparatus for continuously injecting a fluid into a producing well. 3,765,489, Cl. 166-310.000.

Mandery, William L.: *See*—
Matthews, Charles S.; Murphey, Carey E., Jr.; Dittmer, Albert K.; and Mandery, William L., 3,765,486.

Manion, Francis M.: *See*—
Ostdiek, Arthur J.; and Manion, Francis M., 3,765,224.

Mar, Jerry, to Bell Telephone Laboratories, Incorporated. Special masking method of fabricating a planar avalanche transistor. 3,765,961, Cl. 148-175.000.

Maratron Oil Company: *See*—
Argabright, Perry A.; Wenger, Charles B.; and Presley, C. Travis, 3,766,086.

Marchiaro, Ettore: *See*—
De Angelis, Giovanni; and Marchiaro, Ettore, 3,765,339.

Marine Construction & Design Co.: *See*—
Bartl, Ronald W.; and Fulton, George G., 3,765,614.

Maring, Blayne E.; Nicholson, James G.; and Rust, Lynn M., to International Business Machines Corporation. Dynamic time slicing control for microprogrammed controller. 3,766,524, Cl. 340-172.500.

Marino, Louis L.: *See*—
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Marion, Donald L.: *See*—
Strand, Robert C.; Marion, Donald L.; and Anderson, Dennis G., 3,766,113.

Marjuschenko, Vilen Fedorovich: *See*—
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Mark, Douglas E., to General Motors Corporation. Automatic vehicle door lock circuit. 3,765,502, Cl. 180-112.000.

Markowitz, Ivan N.; and Lee, Ernest Paul, to Honeywell Information Systems, Inc. Actuator drive circuitry for producing dual level drive current. 3,766,432, Cl. 317-dig.600.

Marn, Louis, & Co., Inc., mesne: *See*—
Kienholz, Charles M.; and Lohr, Raymond J., 3,765,396.

Maropis, Nicholas: *See*—
Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, 3,765,589.

Marquardt, James F.; and Orlando, Vincent A., to General Motors Corporation. Occupant restraint system. 3,765,699, Cl. 280-150.0ab.

Marsh, Lawrence C., to General Motors Corporation. Electronic combination lock. 3,766,522, Cl. 340-147.0md.

Marshall, John M.: *See*—
Taylor, Harold L.; Marshall, John M.; and Veslocki, Timothy A., 3,765,660.

Martin, Guy E., to Aluminum Company of America. Tube drawing method and apparatus. 3,765,215, Cl. 72-280.000.

Martin, Jerry Thomas, to International Business Machines Corporation. In situ fluorination of graphite in iron alloy. 3,765,929, Cl. 117-106.00r.

Martin, Michael E., to Wagner Electric Corporation. Wheel cylinder and braking means. 3,765,518, Cl. 188-352.000.

Martin Welding, Inc.: *See*—
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Martin-Marietta Corporation, mesne: *See*—
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Martwig, Ernst; Ackelmann, Otto; and Lilingsfeld, Heinz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of 1-nitroanthraquinone. 3,766,222, Cl. 260-369.000.

Maruzen Petrochemical Co., Ltd.: *See*—
Kawaski, Akihiro; and Isao, Maruyana, 3,766,153.

Marx, Louis, & Co., Inc., mesne: *See*—
Carver, Richard N., 3,765,677.

Marzocchi, Alfred, to Owens-Corning Fiberglas. Glass fiber reinforced elastomers. 3,765,927, Cl. 117-72.000.

Maschinenfabrik und Giesserei Netstol AG: *See*—
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Mason, Donald R., to Harris-Intertype Corporation, mesne. Heteroepitaxial structure. 3,766,447, Cl. 317-235.00r.

Mason, John W.: *See*—
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Massachusetts Institute of Technology: *See*—
Wickerson, John T. R.; and Zak, Janusz M., 3,765,908.

Master Lock Company: *See*—
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Mastrangelo, Fred R. Cabinets. 3,765,740, Cl. 312-263.000.

Mastrangelo, Sebastian Vito Rocco, to Du Pont de Nemours, E. I., and Company. Compositions of matter containing ferromagnetic particles and non-ferromagnetic aluminum particles in an elastic material. 3,766,095, Cl. 252-513.000.

Mastrangelo, Sebastian Vito Rocco, to Du Pont de Nemours, E. I., and Company. Compositions of matter containing ferromagnetic particles with electrically insulative coatings and non-magnetic aluminum particles in an elastic material. 3,766,096, Cl. 252-513000.

Masuda, Kazuo; and Sugimoto, Kaname, to Hayashibara Company. Production of alpha-1,6-glucosidases. 3,766,014, Cl. 195-66.00r.

Masuyama, Takeshi; Nishi, Tsuyoshi; and Amemiya, Toshioki, to Matsushita Electric Industrial Co., Ltd. Voltage-nonlinear resistors. 3,766,098, Cl. 252-519.000.

Matejec, Reinhart: *See*—
Weyde, Edith; Scheibitz, Maria; Meyer, Rudolf; and Matejec, Reinhart, 3,765,890.

Mathes, Alva F., to Eastman Kodak Company. Film advancing mechanism for precisely positioning a perforated web. 3,765,583, Cl. 226-36.000.

Mathew, Chempolil T.; Ulmer, Harry F.; Little, Edwin D.; and Curtis, Omer E., Jr., to Allied Chemical Corporation. Oxyalkylated derivatives of glycolurils. 3,766,204, Cl. 260-309.700.

Matsuda, Masakata: *See*—
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Matsumori, Toyomi: *See*—
Sato, Yohta; Matsuda, Masakata; Ohi, Yukio; and Matsumori, Toyomi, 3,765,873.

Matsumoto, Akira: *See*—
Oiwa, Masayoshi; Matsumoto, Akira; Yokoyama, Kenji; Sasaki, Hiromi; Tojima, Masao; and Matsumoto, Kazuya, 3,766,149.

Matsumoto, Kazuya: *See*—
Oiwa, Masayoshi; Matsumoto, Akira; Yokoyama, Kenji; Sasaki, Hiromi; Tojima, Masao; and Matsumoto, Kazuya, 3,766,149.

Matsushima, Shunsuke; and Ueno, Katsuji, to Sumitomo Chemical Company Limited. Method for the polymerization of isoolefin. 3,766,155, Cl. 260-85.30r.

Matsushita Electric Industrial Co., Ltd.: *See*—
Higashiyama, Kenji; and Hirata, Hiroshi, 3,766,022.
Ichida, Takeshige, 3,766,528.
Kawabata, Norio; Kimpara, Nobuyuki; and Takata, Manabu, 3,765,823.
Masuyama, Takeshi; Nishi, Tsuyoshi; and Amemiya, Toshioki, 3,766,098.
Sato, Kohei; and Shimazu, Shunsaku, 3,766,505.
Tsutsumi, Takashi, 3,766,403.
Wada, Toshio; and Shindo, Yasuhiro, 3,766,508.
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Matsushita Electric Industrial Company: *See*—
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Matsushita Electric Industrial Company, Limited: *See*—
Asakawa, Shirow; Nishiyama, Sumio; and Hasegawa, Katsue, 3,766,443.
Sano, Reiji; Yoshimura, Susumu; Asakawa, Shirow; and Hasegawa, Katsue, 3,765,888.
Yamashita, Sadahiko; Anbe, Toshi; Hosokawa, Yoshihiro; and Nakano, Tomoyasu, 3,766,495.

Matsushita, Sachio: *See*—
Iwano, Haruhiko; Hayashi, Katsumi; and Matsushita, Sachio, 3,765,892.

Matt, Richard J., to Textron, Inc. Method of making a low-friction fabric bearing. 3,765,978, Cl. 156-148.000.

Mattern, Dietrich. Line length and justification indicator for typesetting machines. 3,765,686, Cl. 276-11.000.

Matthews, Charles S.; Murphey, Carey E., Jr.; Dittmer, Albert K.; and Mandery, William L., to Shell Oil Company. Well blowout confinement with dense balls. 3,765,486, Cl. 166-290.000.

Mauch, John W.: *See*—
Heffan, Howard; Bergh, Emil M.; Mauch, John W.; and Sawick, Walter J., 3,766,387.

Maurhoff, Gerhard: *See*—
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Maxon Industries, Inc.: *See*—
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Mayer, Ivan: *See*—
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Mayerle, Evan A., to Nalco Chemical Company. One-step method for the production of tri(N-buryl) lead imidazole. 3,766,198, Cl. 260-299.000.

Maynard, Harry; and Boot, Roy Desmond, to Hawker Siddeley Aviation Limited. Aircraft. 3,765,626, Cl. 244-129.00d.

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Device for the production of carbonated beverages. 3,765,318, Cl. 99-275.000.

Mc Connell, Frederick C.; Jason, George; and Armstrong, Neil J., to Spartan Air Services Limited. Aerial survey. 3,765,770, Cl. 356-152.000.

Mc Dermott, John M.: *See*—
Ritchey, Harold W.; and Mc Dermott, John M., 3,765,177.

Mc Leod, Wilfred R.: *See*—
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McAndrew, Francis Borgia, to Celanese Corporation. Process for preparing non-tacky couples oxymethylene copolymers. 3,766,298, Cl. 260-858.000.

McConnell, Frederick C.; Jason, George; and Armstrong, Neil J. Aerial survey. 3,765,766, Cl. 356-4.000.

McConnell, Frederick C.; Jason, George; and Armstrong, Neil J., to Spartan Air Services, Limited. Aerial survey. 3,766,312, Cl. 178-6.800.

McCoy, James L. Fluid sampling device. 3,765,246, Cl. 73-422.0tc.

McDonnell Douglas Corporation: *See—*
Donelson, John E.; and Douglas, William M., 3,765,623.
Gibson, James O.; Schumacher, Robert L.; and Myler, Kay L., 3,766,000.

McEver, James W., to Shell Oil Company. Apparatus and method for releasing differentially stuck pipe. 3,765,487, Cl. 166-301.000.

McGregor, John C., to Boise Cascade. Ski base. 3,765,695, Cl. 280-28.000.

McIntosh, Michael D.; and Scott, Donald K., Jr., to Landis Tool Company. Electronic stepping drive for DC torque motor. 3,766,459, Cl. 318-603.000.

McKaveney, James P., to Occidental Petroleum Corporation. Process for the removal of ionic metallic impurities from water. 3,766,036, Cl. 204-150.000.

McKenzie, Roland W.; and Stansberry, Richard, to City Tank Corporation. Container lift system. 3,765,555, Cl. 214-302.000.

McLaughlin, George B.; and Wilcox, George A., to Kendall Company, The. Apparatus for altering weight profile or picker laps. 3,765,057, Cl. 19-89.000.

McLaughlin, Paul, to Racal-Thermionic Limited. Computer-compatible tape and readings system therefor. 3,766,529, Cl. 340-172.500.

McMillan, Stephen L., to General Electric Company. Belt mechanism. 3,765,268, Cl. 74-640.000.

McMillen, Richard Leo, to Lubrizol Corporation, The. Groups I and II metal-containing micellar complexes. 3,766,066, Cl. 252-32.70e.

McMillen, Richard Leo, to Lubrizol Corporation, The. Calcium-containing micellar complexes. 3,766,067, Cl. 252-33.000.

McQuade, James M., to General Electric Company. Method of making a dispersion from polyamide-acid. 3,766,117, Cl. 260-29.20n.

Mearl Corporation, The, mesne: *See—*
Chan, Kam H., 3,766,105.

Medical Controls, Inc.: *See—*
Ward, George Dewey, Jr., 3,765,411.

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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Ebedev, Vladimir Konstantinovich; Baglay, Vitaly Michailovich; Bondarenko, Oleg Petrovich; Sidorenko, Michail Nikolaevich; and Bogachenko, Alexey Georgievich, 3,765,471.

Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moislevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich. Device for cooling systems of large-capacity electroslag remelting furnaces. 3,766,304, Cl. 13-32.000.

Meges, Helmut, to Metallwerke Neheim Goeke & Co. KG. Combined shut-off and drain valve. 3,765,450, Cl. 137-596.200.

Meier, Ernie A.; and Micallef, Alfred M., to K. & M. Rubber Co. Removable oven door gasket. 3,765,400, Cl. 126-190.000.

Melidosian, Elizabeth Sylvia. Circuit interruptor for ignition system with improved rotary contact. 3,766,339, Cl. 200-24.000.

Mellan, Ibert, to Polychrome Corporation. Elevated image printing plate. 3,765,894, Cl. 96-86.000.

Melnick, Daniel: *See—*
Gooding, Chester Martin; Parker, Wilbur; and Melnick, Daniel, 3,766,226.

Menard, Louis Francois A., to Compagnie Francaise des Petroles and Techniques Louis Menard. Device and method for the attachment of pipelines to an underwater surface. 3,765,184, Cl. 61-72.300.

Mendel, Arthur, to Riker Laboratories, Inc., mesne. Polyfluoroalkoxy-substituted aromatic carboxylic acids and esters and salts thereof. 3,766,247, Cl. 260-473.00r.

Mendenhall, Charles A.; Williams, Richard D.; Michaels, Fred G.; and Gifford, William E., to General Motors Corporation. Transmission shift control. 3,765,262, Cl. 74-473.00r.

Menelly, Richard A., to International Telephone and Telegraph Corporation. Integral emissive electrode. 3,766,423, Cl. 313-311.000.

Menguy, Pierre: *See—*
Mimoun, Hubert; De Roch, Irenee Seree; Sajus, Lucien; and Menguy, Pierre, 3,766,232.

Menn, Julius J.: *See—*
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Menssen, Hans Georg; and Honerlagen, Hans, to Natterman, A., & Cie GmbH. Process for obtaining water-soluble aescin from dry horse chestnut seeds extracts. 3,766,166, Cl. 260-210.500.

Mentrup, Anton; Schromm, Kurt; Renth, Ernst-Otto; and Reichl, Richard, to Boehringer Ingelheim G.m.b.H. 3-Benzazepines and salts thereof. 3,766,170, Cl. 260-239.0bb.

Menzies, Robert T., to United States of America, National Aeronautics and Space Administration. Monitoring atmospheric pollutants with a heterodyne radiometer transmitter-receiver. 3,766,380, Cl. 250-343.000.

Merck & Co., Inc.: *See—*
Sletzinger, Meyer; Reinhold, Donald F.; and Harmetz, Ronald, 3,766,259.

Merit Abrasive Products, Inc.: *See—*
Block, Aleck, 3,765,130.

Merker, Steve L.: *See—*
Stungis, George E.; Merker, Steve L.; Parish, Harlis A., Jr.; and Striegel, Richard G., 3,765,425.

Merkle, Daniel R. Orthopedic drop foot boot. 3,765,409, Cl. 128-80.00e.

Mesta Machine Company: *See—*
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Metallgesellschaft Aktiengesellschaft: *See—*
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Rudolph, Paul; and Kapp, Ernst, 3,765,167.

Metalloxyd Gesellschaft mit beschrankter Haftung: *See—*
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Metallwerke Neheim Goeke & Co. KG: *See—*
Meges, Helmut, 3,765,450.

Metcalfe, Kenneth A.; and Smith, Ian E., to Commonwealth of Australia, The. Edge and latitude developer. 3,766,072, Cl. 252-62.100.

Metzner, Wolfgang; Rudolph, Hans; Fuhr, Karl; and Schnell, Hermann, to Bayer Aktiengesellschaft. Polyester moulding and coating materials which can be set by ultraviolet irradiation. 3,766,111, Cl. 260-28.000.

Meyer, Harry C., III: *See—*
Roberts, Thomas G.; Shatas, Romas A.; Meyer, Harry C., III; and Stettler, John D., 3,766,004.

Meyer, Rudolf: *See—*
Weyde, Edith; Scheibitz, Maria; Meyer, Rudolf; and Matejec, Reinhart, 3,765,890.

Meyer-Stoll, Hans Albrecht; and Berndt, Heinz, to Deutsche Texaco Aktiengesellschaft. Rigid phenolic foams suitable for use as non-flammable insulating material. 3,766,100, Cl. 260-2.5fp.

Meyercord Co., The: *See—*
Davis, Allan C., 3,765,145.

Micallef, Alfred M.: *See—*
Meier, Ernie A.; and Micallef, Alfred M., 3,765,400.

Michaels, Fred G.: *See—*
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Micromedic Systems, Inc.: *See—*
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Microsystems International, Limited: *See—*
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Milch, Alfred E.: *See—*
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Miles, Thomas R., to Foamat Foods Corporation. Plural gas stream dryer. 3,765,103, Cl. 34-218.000.

Miller, John T., Jr.: *See—*
Parts, Leo P.; and Miller, John T., Jr., 3,766,157.

Milligan, Gordon L.: *See—*
Hotte, Gary D.; and Milligan, Gordon L., 3,766,501.

Mimoun, Hubert; De Roch, Irenee Seree; Sajus, Lucien; and Menguy, Pierre, to Institut Francais du Petrole des Carburants et Lubrifiants. Organo-metallic peroxidic derivatives of molybdenum and tungsten and their process of manufacture and use. 3,766,232, C. 260-429.00r.

Minieri, Pasquale Paul, to Tenneco Chemicals, Inc. 1,1-Dialkyl-2-(substituted indazolyl-N^1-methyl) hydrazines. 3,766,207, Cl. 260-310.00c.

Minieri, Pasquale Paul, to Tenneco Chemicals, Inc. N-(substituted indazolyl-N-^{1}-methyl) alkyleneimines and their use as biocides. 3,766,192, Cl. 260-293.600.

Minnesota Mining and Manufacturing Company: *See—*
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Natkanski, Zygmunt, 3,765,405.
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Strehlow, Wolfgang H., 3,765,984.

Minolta Camera Kabushiki Kaisha: *See—*
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Miranker, Samuel H.: *See—*
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Mishimora, Tohro; Kibe, Yoshitoshi; and Yokoshi, Yasushiko, to Fujitsu Limited. System for driving a self excited pulse motor in accordance with the movement of the rotor. 3,766,458, Cl. 318-313.000.

Miskowicz, Carl J.: *See—*
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Mississippi State University Development Foundation Inc.: *See—*
Smith, James E.; Cole, Avean Wayne; and Douglas, Alvin G., 3,765,865.

Mito, Hiroshi. Mechanism for relative adjustment of axially spaced lens components. 3,765,748, Cl. 350-187.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Ito, Toshio; Nomaguichi, Tamotsu; Sakai, Masahiro; and Ito, Koji, 3,765,820.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
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Mitsubishi Pencil Co., Ltd.: *See—*
Hashimoto, Yasuyuki; Torii, Osamu; and Torii, Sugako, 3,765,781.

Mitsui Mining & Smelting Co., Ltd.: *See—*
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Mitsui Shipbuilding and Engineering Co. Ltd.: *See—*
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Mitsui Toatsu Chemicals, Incorporated: *See—*
Yoshimura, Kiyotaka; Asano, Shiro; Honda, Tadatoshi; and Tsuchiya, Ryoji, 3,766,088.

Mitsushiti Chemical Industries, Ltd.: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Sarurvatari, Hidetoshi, 3,766,158.

Miyano, Tadashi, to Tokyo Shibaura Electric Co., Ltd. Method for coating the surface of a thin wire with a layer of another metal. 3,765,930, Cl. 117-114.00r.

Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, to Asahi Kasei Kogyo Kabushiki Kaisha. High speed wet spinningtechnique. 3,765,818, Cl. 425-445.000.

Mizutani, Toshio: *See—*
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Mobil Oil Corporation: *See—*
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Fisher, Robert E., 3,765,067.
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Mochimaru, Hideaki, to Ricoh Co., Ltd. Zoom mechanism for a reproducing apparatus. 3,765,760, Cl. 355-58.000.

Moe, Martin A., Jr.; Isles, Juno; and Dunathan, Jay P., to Oceanography Mariculture. Process and apparatus for mariculture production. 3,765,372, Cl. 119-3.000.

Moeller & Neumann G.m.b.H.: *See—*
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, 3,765,293.

Moffett, Robin Henry; Smith, Peter William; and Vonwiller, Christopher Charles, to Plessy Handel und Investments A.G. Data switching exchanges. 3,766,322, Cl. 179-15.0bv.

Moise, Norton L.: *See—*
Morsell, Arthur Lee; and Moise, Norton L., 3,766,385.

Moklebust, Gudrun: *See—*
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Moklebust, Olav; deceased (by Moklebust, Gudrun; executrix), to N L Industries, Inc. Method for the selective recovery of metallic iron and titanium oxide values from ilmenites. 3,765,868, Cl. 75-1.000.

Moline, Roy Virgil, to Jeno's Inc. Method of scoring frozen pizza. 3,765,909, Cl. 426-383.000.

Momose, Yutaka: *See—*
Asano, Tadao; Kitano, Shin; Yamaguchi, Hiroji; and Momose, Yutaka, 3,765,520.

Monarch Marking Systems, Inc., mesne: *See—*
Olsen, Robert F., 3,765,110.

Monfort, Platt. Reinforced mast construction. 3,765,360, Cl. 114-90.000.

Monroe, Jack L.: *See—*
Bornhorst, Kenneth F.; Monroe, Jack L.; Culbertson, Alvin E.; Thomas, David E.; and Drake, Donald E., 3,766,560.

Monsanto Company: *See—*
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Montecatini Edison S.p.A.: *See—*
Caporiccio, Gerardo; and Strepparola, Ezio, 3,766,251.

Montesi, Louis J., to United States of America, Navy. Water-armed air safetied detonator. 3,765,331, Cl. 102-16.000.

Montgomery, Harold S.; and Budnik, Roger J., to Nutting, David J. and Nutting, Phyllis M., mesne. Multiple play or instructional device. 3,765,105, Cl. 35-9.00a.

Montrella, Anthony James. Swim training paddle. 3,765,042, Cl. 9-307.000.

Moore, Lawrence A. Blow molding apparatus. 3,765,813, Cl. 425-174.000.

Moore, Robert L., to Westinghouse Electric Corporation. Door lock for laundry apparatus. 3,765,194, Cl. 68-139.000.

Moore, William M. Method of making modular iron castings. 3,765,876, Cl. 75-130.00a.

Moran, Ralph T.: *See—*
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Morris, Myron J.: *See—*
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Morris, Richard L., to Carrier Corporation. Heating apparatus for outdoors operation. 3,765,398, Cl. 126-110.00b.

Morris, Robert Charles; Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., to Bell Telephone Laboratories, Incorporated. Detection of cycle slippage between two signals. 3,766,484, Cl. 328-179.000.

Morrison, George W., to Maxon Industries, Inc. Self-loading truck. 3,765,554, Cl. 214-302.000.

Morrison, Howard J.; and Glass, Marvin I., to Glass, Marvin, & Associates. Toy vehicle. 3,765,693, Cl. 280-1.182.

Morrison, John E., Jr.; and Yoder, Elmon E., to United States of America, Agriculture. Cured tobacco leaf stripper. 3,765,424, Cl. 131-131.000.

Morrow, Warren P., to United States of America, Army. Method of measuring side slap of a projectile in gub tube. 3,765,235, Cl. 73-167.000.

Morse, Albert R., to IMS Company. Spraying apparatus and means for refilling spray cans. 3,765,459, Cl. 141-20.000.

Morse, Harold H.; Plock, Layne F.; and Morgan, Fred Keith, to National Distillers and Chemical Corporation. Reactor for preparing an easily compactable material. 3,765,653, Cl. 259-3.000.

Morse, John F. Explosion-safe boat hull construction. 3,765,041, Cl. 9-6.000.

Morsell, Arthur Lee; and Moise, Norton L., to Xonics, Inc. Rolling cylinder cassette for electron radiography. 3,766,385, Cl. 250-468.000.

Moslener, Jorn, to DEMAG Aktiengesellschaft. Compact rolling mill for metal strands. 3,765,212, Cl. 72-249.000.

Moss, Harry A.: *See—*
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Moss, Harry A., to Moss, Helen S. and Moss, Harry A. Synthetic solvent still. 3,766,017, Cl. 202-187.000.

Moss, Helen S.: *See—*
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Moss, Norman; and Broad, Michall John, to Plessey Handel und Investments A.G. Liquid-spraying devices having a nozzle subjected to high-frequency vibrations. 3,765,606, Cl. 239-102.000.

Mostardo, August, Jr.: *See—*
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Motoren- und Turbinen-Union Munchen G.m.b.H.: *See—*
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Motoren-und Turbinen-Union GmbH: *See—*
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Mott, Carl W., to Mott Corporation. Means for connecting a blade to a mower shaft. 3,765,158, Cl. 56-294.000.

Mott Corporation: *See—*
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Motz, Carl H.: *See—*
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Mudd, Derek Percival, to Lionweld Limited. Grids, gratings or like open work support surfaces of floors. 3,765,136, Cl. 52-180.000.

Mueller, David Charles, to American Can Company. Display carton with locking flaps. 3,765,529, Cl. 206-45.140.

Mueller, Volkmar; Berendt, Hans Ulrich; and Harris, Allschwil, to Ciba-Geigy AG. Process for improving the wet fastness properties of dyeings on polyamide fibre material. 3,765,839, Cl. 8-165.000.

Mueller, Wolfgang H.: *See—*
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Muller, Erwin: *See—*
Zakrewsky, Czeslaw; Taubken, Werner; and Muller, Erwin, 3,766,455.

Muller, Helmut, to Winterhalter, Karl, KG. Automatic dish rinsing machine having a centrifugal force separator. 3,765,430, Cl. 134-109.000.

Muller, Walter: *See—*
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Muller-Wartenberg, Heinz: *See—*
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Mulvey, Dennis M.: *See—*
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Munyon, Henry Lawrence, to Whittaker Corporation. Unidirectional tensile test specimen incorporating integrated load pads. 3,765,996, Cl. 161-39.000.

Munz, Roger L.: *See—*
Schneider, Frank P.; and Munz, Roger L., 3,765,045.

Murakami, Masuo; Inukai, Noriyoshi; and Nagano, Noriaki, to Yamanouchi Pharmaceutical Co., Ltd. Carbonyldioxymorphinan derivatives. 3,766,188, Cl. 260-285.000.

Murakami, Tadao: *See—*
Fujita, Shiro; Kimura, Hiroshiro; Murakami, Tadao; and Arimoto, Heiji, 3,765,069.

Murakami, Yoshio; and Kume, Makoto, to Nippon Sheet Glass Co., Ltd. Phototropic glass. 3,765,913, Cl. 106-54.000.

Murdoch, Henry W.; and Schumacher, Percy W., Jr., to Murphey, G. W., Industries, Inc. Drill bit seals. 3,765,495, Cl. 175-371.000.

Muroc Products Corporation: *See—*

Greene, Howard M., 3,766,030.
Murphey, Carey E., Jr.: *See—*
Matthews, Charles S.; Murphey, Carey E., Jr.; Dittmer, Albert K.; and Mandery, William L., 3,765,486.
Murphey, G. W., Industries, Inc.: *See—*
Murdoch, Henry W.; and Schumacher, Percy W., Jr., 3,765,495.
Murphy, Donald P., to Oxy Metal Finishing Corporation, mesne. Stripping composition and process. 3,766,076, Cl. 252-156.000.
Murphy, Patrick J., II. Material misfeed detector for power press. 3,765,283, Cl. 83-61.000.
Murphy, Thomas V. Crane for extracting horizontal long tube bundles. 3,765,544, Cl. 214-1.00p.
Murphy, Walter T., to Goodrich, B. F., Company, The. Process of producing a permeable synthetic film. 3,765,925, Cl. 117-63.000.
Murray Herbert C.: *See—*
Herr, Milton E.; Murray Herbert C.; and Fonken, Gunther S., 3,766,012.
Mutchler, Paul A., to American Air Filter Company, Inc. Disposal system for human waste. 3,765,035, Cl. 4-131.000.
Muto, Masataro: *See—*
Takezawa, Isoe; Muto, Masataro; and Mori, Koichi, 3,765,359.
Mutron Industries, Ltd.: *See—*
Liwa, Shieu Shin, 3,766,108.
Myagchenkov, Alexei Andreevich: *See—*
Shule, Edmund Khristianovich; Kutokov, Sergei Sergeevich; Rytvin, Evgeny Isaevich; Myagchenkov, Alexei Andreevich; Khodakovsky, Mikhail Davydovich; Bakanov, Nikolai Gavrilovich; Shevchenko, Nikolai Ivanovich; and Shiman, Oleg Petrovich, 3,765,852.
Myers Excavating Ltd.: *See—*
Daviduke, Peter M., 3,765,109.
Myhr, Lars Halvar; and Svensson, Lars-Ake Erling, to Borgs Fabriks AB. Method and apparatus for restoring the retractible barrier of an aircraft arrester. 3,765,625, Cl. 244-110.00c.
Myler, Kay L.: *See—*
Gibson, James O.; Schumacher, Robert L.; and Myler, Kay L., 3,766,000.
Mystrom, Karl Gosta. Vehicle chair having a resiliently supported seat. 3,765,639, Cl. 248-399.000.
N L Industries, Inc.: *See—*
Moklebust, Olav, 3,765,868.
Nadella: *See—*
Pitner, Alfred, 3,765,736.
Nagano, Noriaki: *See—*
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Nagaoka, Yoshihiko: *See—*
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Nakagawa, Keiiti: *See—*
Eda, Shinjiro; Iwabuchi, Hiroshi; Yamagishi, Kazuo; and Nakagawa, Keiiti, 3,765,871.
Nakajima, Hisao: *See—*
Baba, Takeshi; Yaku, Tadao; Nakajima, Hisao; Kishimoto, Toshihiko; and Yoshida, Kenichi, 3,766,378.
Nakajima, Rokuro: *See—*
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro, 3,766,019.
Nakamura, Kenya, to Toyota Jidosha Kogyo Kabushiki Kaisha. Composite gas turbine set. 3,765,170, Cl. 60-39.700.
Nakane, Hisao, to Yokogawa Electric Works, Ltd. Capacitance and loss tangent measuring apparatus. 3,766,469, Cl. 324-60.00c.
Nakanihon Sangyo Company, Limited: *See—*
Futamura, Masaharu; and Ookuma, Atsutaka, 3,765,433.
Nakanishi, Michio; Tashiro, Chiaki; and Araki, Kazuhiko, to Yoshitomi Pharmaceutical Industries, Ltd. N-substituted piperidine compounds. 3,766,174, Cl. 260-240.0tc.
Nakanishi, Tomoyuki, to Omron Tateisi Electronics Co. Paper money receiving apparatus. 3,765,523, Cl. 194-4.00r.
Nakano, Tomoyasu: *See—*
Yamashita, Sadahiko; Anbe, Toshi; Hosokawa, Yoshihiro; and Nakano, Tomoyasu, 3,766,495.
Nakata, Tetsuya: *See—*
Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, 3,766,101.
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Napolitano, Orlando: *See—*
Morris, Robert Charles; Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., 3,766,484.
Nash, Douglas B. Lever-release cam cleat. 3,765,061, Cl. 24-134.000.
Nasica, Jean Roger, to Intercan S.A. Apparatus and method for producing container with composite walls. 3,765,976, Cl. 156-105.000.
Nason, Steven B.: *See—*
Pratt, Richard J.; Crowley, Arthur W.; Nason, Steven B.; and Schmehr, William R., 3,766,109.
Natale, Michael R.: *See—*
Malarkey, Edward C.; Natale, Michael R.; and Ogland, Jon W., 3,766,084.
National Cash Register Company, The: *See—*
Bornhorst, Kenneth F.; Monroe, Jack L.; Culbertson, Alvin E.; Thomas, David E.; and Drake, Donald E., 3,766,560.
Krecioch, Theodore H.; and Pyzer, Laurence J., 3,766,364.
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National Distillers and Chemical Corporation: *See—*
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National Starch and Chemical Corporation: *See—*
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National-Southwire Aluminum Company: *See—*
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Natkanski, Zygmunt, to Minnesota Mining and Manufacturing Company. Sphygmomanometer cuff. 3,765,405, Cl. 128-2.05c.
Natterman, A., & Cie GmbH: *See—*
Menssen, Hans Georg; and Honerlagen, Hans, 3,766,166.
Nayar, Harbhajan S., to Contemporary Research Inc. Production of copper and copper oxide powder for powder metallurgy. 3,765,866, Cl. 75-.50b.
Naylor, Floyd E., to Phillips Petroleum Company. Polymerization process employing multifunctional polymerization initiators prepared from alkyl-substituted tertiary amines. 3,766,154, Cl. 260-84.700.
Neave, Arthur S., Jr.: *See—*
Langstroth, Theodore A.; and Neave, Arthur S., Jr., 3,766,083.
Nedelec, Lucien; and Bucourt, Robert, to Roussel-UCLAF. Substituted tricyclic compounds and process for their preparation. 3,766,248, Cl. 260-476.00c.
Nederlandse Optiek-en Instrumentenfabriek Dr. C.E. Bleeker N.V.: *See—*
Bolk, Willem Thomas, 3,766,401.
Neel, John S., Jr. Pinless piston assembly. 3,765,307, Cl. 92-187.000.
Neff, Dean O. Thatch removal device. 3,765,159, Cl. 56-396.000.
Nelson, Melvin A.; Clark, John C.; and Lackey, Jerry G., to EG & G, Inc. Light pulse analyzing detector system. 3,766,392, Cl. 250-199.000.
Nelson, Norman A., to Texas Iron Works, Inc. Valve and actuator assembly. 3,765,642, Cl. 251-14.000.
Nelson, Robert E.; and Watts, Oran A., III, to General Motors Corporation. Automatic relight. 3,765,176, Cl. 60-223.000.
Nelson, Roger P.: *See—*
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Neotec Corporation: *See—*
Ganssle, Eugene R.; and Webster, Donald R., 3,765,775.
Nettles, Henry D.; and Bazzell, John S. System for control of oil well production. 3,765,442, Cl. 137-391.000.
Neumann, Friedhelm; and Willim, Fritz, to Concast AG. Rotatable tundish with multiple outlets. 3,765,572, Cl. 222-167.000.
Neuwirth, Peyton Sidney. Dental impression tray. 3,765,092, Cl. 32-17.000.
Nevett, Leslie James, to Lucas, Joseph, (Industries) Limited. Electric switches. 3,766,344, Cl. 200-85.00a.
Newcor, Inc.: *See—*
Fisher, Simon, 3,765,278.
Newell, Keith, to Sno Pac Corporation, mesne. Apparatus for aiding disposal of snow by compacting it to great density. 3,765,321, Cl. 100-45.000.
Newton, Catherine H.: *See—*
Brandon, Clarence W., 3,765,804.
Ni Tec, Inc., mesne: *See—*
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Nicholson, James G.: *See—*
Maring, Blayne E.; Nicholson, James G.; and Rust, Lynn M., 3,766,524.
Nicolai, Van O.; and Fox, Harry W., to United States of America, Navy. Holding cladding for laser slabs. 3,766,493, Cl. 331-94.500.
Nield, Eric; and Rose, John Brewster, to Imperial Chemical Industries Limited. Acrylonitrile copolymers. 3,766,142, Cl. 260-47.0ua.
Nielsen, Adners: *See—*
Bogart, Marcel J. P.; Nielsen, Adners; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,766,278.
Nielsen, Irvin P.: *See—*
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Nikles, Erwin: *See—*
Batzer, Hans; Nikles, Erwin; Ernst, Otto; and Porret, Daniel, 3,766,211.
Nilsson, Alex Gustav Allan. Methods of introducing fuel into an internal combustion engine and devices therefor. 3,765,381, Cl. 123-33.0vc.
Nilsson, Jan, to Allmanna Svenska Elektriska Aktiebolaget. Die for hydrostatic extrusion of sections having elongated projections. 3,765,221, Cl. 72-467.000.
Nippon Electric Company, Limited: *See—*

Takahashi, Makoto; Hashimoto, Takao; and Takahashi, Akinori, 3,766,412.
Tomozawa, Atsushi, 3,766,542.

Nippon Kokan Kabushiki Kaisha: *See—*
Eda, Shinjiro; Iwabuchi, Hiroshi; Yamagishi, Kazuo; and Nakagawa, Keiiti, 3,765,871.
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Nippon Oil Company, Ltd.: *See—*
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Nippon Seal Co., Ltd.: *See—*
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Nippon Sheet Glass Co., Ltd.: *See—*
Murakami, Yoshio; and Kume, Makoto, 3,765,913.

Nippon Steel Corporation: *See—*
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Nippon Tenshashi Kabushiki Kaisha: *See—*
Ibata, Yozo, 3,765,089.

Nippon Yakin Kogyo Company Limited: *See—*
Sato, Yohta; Matsuda, Masakata; Ohi, Yukio; and Matsumori, Toyomi, 3,765,873.

Nippondenso Co., Ltd.: *See—*
Sumiyoshi, Masaharu; Ito, Osamu; and Kato, Takaaki, 3,766,367.

Nishi, Tsuyoshi: *See—*
Masuyama, Takeshi; Nishi, Tsuyoshi; and Amemiya, Toshioki, 3,766,098.

Nishikawa, Atsuro: *See—*
Kawai, Isamu; Nishikawa, Atsuro; Takagi, Osamu; Iwata, Akira; and Sugiyama, Kohei, 3,766,099.

Nishimoto, Tatsuya: *See—*
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Nishimura, Jiro: *See—*
Sumikama, Sadao; Osato, Kazuhiro; and Nishimura, Jiro, 3,765,238.

Nishiyama, Sumio: *See—*
Asakawa, Shirow; Nishiyama, Sumio; and Hasegawa, Katsue, 3,766,443.

Niss, Erik, to AGA Aktiebolag. Coordinate measuring instrument. 3,765,764, Cl. 356-156.000.

Nissan Motor Company, Limited: *See—*
Sakai, Shoji, 3,765,720.

Nittel, Fritz, to Agfa-Gevaert Aktiengesellschaft. Process of incorporating additives into photographic emulsions. 3,765,897, Cl. 96-100.000.

Nitz, Albert H. Hose clamp. 3,765,066, Cl. 24-279.000.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Information converter. 3,765,311, Cl. 95-10.0ct.

Noguchi, Yoshiro, to Minolta Camera Kabushiki Kaisha. Zooming device for zoom lenses. 3,765,751, Cl. 350-252.000.

Noma-World Wide, Inc.: *See—*
Sadacca, Albert V.; and Paulfus, Bernard, 3,766,376.

Nomaguichi, Tamotsu: *See—*
Ito, Toshio; Nomaguichi, Tamotsu; Sakai, Masahiro; and Ito, Koji, 3,765,820.

Nomura, Hirotsugu: *See—*
Oguchi, Yutaka; and Nomura, Hirotsugu, 3,766,057.

Non-Ferrous International Corporation, mesne: *See—*
Winter, Richard M.; and Aylard, William F., 3,765,207.

Noord, Jacobus Andrianus Johannes Maria Van; Rapmund, Leonard Henry; and Tacken, Jan Mathieu Marie, to U.S. Philips Corporation. Microscope and tool for mechanically and/or electrically connecting a semiconductor device to a substrate. 3,765,744, Cl. 350-8.000.

Norfin, Inc.: *See—*
Johnson, Dale Richard, 3,765,670.

Norm A.M.C. AG: *See—*
Tofaute, Klais, 3,765,656.

Norris, Leon Frederick: *See—*
Evans, David John Ivor; Fustokian, David Alan Wayne; Norris, Leon Frederick; and Fraser, Robert William, 3,765,867.

North American Philips Corporation: *See—*
Poleshuk, Michael; and Milch, Alfred E., 3,765,962.

North American Rockwell Corporation: *See—*
Blomberg, Maurits C., 3,765,671.
Burkey, Lee C., 3,765,128.

Northcutt, Michael E. Orthodontic onlay for light-wire technique. 3,765,091, Cl. 32-14.00a.

Northern Electric Company, Limited: *See—*
Van Dyk, Robert Maarten; and Maheux, Peter Francis, 3,766,350.

Northern Illinois Gas Company: *See—*
Batz, James E., 3,766,544.

Northwest Technical Industries, Inc.: *See—*
Hare, Alan W.; and Carlson, Ronald J., 3,765,119.

Nowell, John R., to Honeywell Information Systems, Inc. Crowbar circuit responsive to decrease in the power supply. 3,766,433, Cl. 317-16.000.

Nuarc Company, The: *See—*
Leonhart, Charles J.; and Lewandowski, Edward W., 3,765,761.

Nukem, G.m.b.H.: *See—*
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NUKEM Nuklear-Chemie und- Metallurgie G.m.b.H.: *See—*
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Nutting, David J.: *See—*
Montgomery, Harold S.; and Budnik, Roger J., 3,765,105.

Nutting, Phyllis M., mesne: *See—*
Montgomery, Harold S.; and Budnik, Roger J., 3,765,105.

N.V. Industrieele Handelscombinate: *See—*
Raaymakers, Rene A.M.M., 3,765,649.

N.V. Industrieele Handelscombinatie Holland: *See—*
de Groot, Robert, 3,765,570.

N.V. Machinenfabrik: *See—*
Van Raay, Albertus, 3,765,320.

Nygaard, James L., to Texas Instruments, Incorporated. Automatic slice processing. 3,765,763, Cl. 355-100.000.

Oberhauser, Ernst-Gunther: *See—*
Fries, Gunter Karl; and Oberhauser, Ernst-Gunther, 3,765,293.

Oberlander, Karl: *See—*
Kraft, Paul; and Oberlander, Karl, 3,765,563.

Oblowski, Jan Alexander: *See—*
Lee, Henry L., Jr.; Stoffey, Donald G.; Stang, Albert F.; and Oblowski, Jan Alexander, 3,766,132.

Occidental Petroleum Corporation: *See—*
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Oceanography Mariculture: *See—*
Moe, Martin A., Jr.; Isles, Juno; and Dunathan, Jay P., 3,765,372.

OCME Officina Costruzioni Mecegniche Emiliana S.r.l.: *See—*
Ghiretti, Aldo, 3,765,146.

O'Connell, Thomas Francis. Game employing magnet playing pieces and magnetizable game board. 3,765,679, Cl. 273-131.0ad.

Oeckl, Otto. Adjusting device for multiple spindle boring heads. 3,765,786, Cl. 408-46.000.

Oertel, Gunther: *See—*
Holtschmidt, Hans; Gold, Heinrich; and Oertel, Gunther, 3,766,217.

Ogino, Yoshihisa, to Shinpo Kogyo Kabushiki Kaisha (Shinpo Kogyo Co., Ltd.). Contact pressure transmitting system of a stepless speed change gear. 3,765,257, Cl. 74-199.000.

Ogland, Jon W.: *See—*
Malarkey, Edward C.; Natale, Michael R.; and Ogland, Jon W., 3,766,084.

Ogland, Jon W., to Westinghouse Electric Corporation. High resolution, high intensity cathode ray tube. 3,766,428, Cl. 315-31.00r.

Ogle, James A.; and Holz, George E., to Burroughs Corporation. Panel-type display device. 3,766,420, Cl. 313-109.500.

Ognyanov, Michael. Semiconductive compositions. 3,766,094, Cl. 252-512.000.

Oguchi, Yutaka; and Nomura, Hirotsugu, to Nippon Oil Company, Ltd. Process for the catalytic hydrogenation of distillation residuum-containing hydrocarbons and the catalyst composition therefor. 3,766,057, Cl. 208-143.000.

O'Hara, Kevin John: *See—*
Hudson, Alan George; and O'Hara, Kevin John, 3,766,144.

Ohata, Keiichi: *See—*
Sawada, Hideo; Ohata, Keiichi; and Tsukane, Nagayoshi, 3,766,122.

Ohi, Yukio: *See—*
Sato, Yohta; Matsuda, Masakata; Ohi, Yukio; and Matsumori, Toyomi, 3,765,873.

Ohnaka, Jumpei. Fluid driven propulsion and generator mechanism. 3,765,175, Cl. 60-221.000.

Oiwa, Masayoshi; Matsumoto, Akira; Yokoyama, Kenji; Sasaki, Hiromi; Tojima, Masao; and Matsumoto, Kazuya, to Osaka Soda Co., Ltd. Diallyl phthalate-ethylene precopolymer and process for preparation thereof. 3,766,149, Cl. 260-78.5bc.

Ojima, Masaki; Otoyo, Ryouichi; and Shiraishi, Tomohiko, to Kawasaki Jukogyo Kabushiki Kaisha. Construction of heating surface of waste heat boiler for metal refining furnace. 3,765,664, Cl. 266-43.000.

OK Partnership: *See—*
Bucy, Thomas R.; and Bandenburg, Daniel J., 3,765,669.

Okabe, Taro; and Tanikawa, Eiki, to Fujitsu Limited. Method of manufacturing semiconductor devices. 3,765,963, Cl. 148-188.000.

Okano, Shigeaki: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Sarurvatari, Hidetoshi, 3,766,158.

Okuma Machinery Works Ltd.: *See—*
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Okuno, Yositosi: *See—*
Ueda, Kenzo; Mizutani, Toshio; Itaya, Nobushige; and Okuno, Yositosi, 3,766,218.

Olah, George A., to Esso Research and Engineering Company. Process for the isomerization of hydrocarbons. 3,766,286, Cl. 260-668.00a.

Olhoft, Gary V., to Union Carbide Corporation. Printing ink compositions containing an alkanolamine salt of an aliphatic alpha-olefin/acrylic acid copolymer. 3,766,116, Cl. 260-29.6hn.

Olin Corporation: *See—*
Pregler, John E., 3,766,181.
Sperry, Philip R.; Winter, Joseph: and Pryor, Michael J., 3,765,877.
Van Allman, Don T.; and Voss, Robert C., 3,765,050.

Olive, Janet R. Pattern perfecter. 3,765,095, Cl. 33-14.000.

Oliver, Floyd F.: *See—*
Duffer, Edward F.; Funk, Ernest J.; Jankowski, Alfred S.; Lane, Jack C.; Lehner, William L.; Oliver, Floyd F.; and Schneider, Mark, 3,765,590.

Olney, Frederick D., Jr.; Crump, Robert O.; and Kowalski, John L., to Honeywell Information Systems, Inc. Method and apparatus for inserting pins into a circuit board. 3,765,075, Cl. 29-203.00b.

Olsen, Robert F., to Monarch Marking Systems, Inc., mesne. Security-type fastener. 3,765,110, Cl. 40-20.00r.

Olsen, Willi, to Siemens Aktiengesellschaft. Electric high-voltage compressed-gas-insulated power transmission line. 3,766,306, Cl. 174-16.00b.

Olsson, Sven-Gunnar Sigvard, to Siemens Aktiengesellschaft. Flow measuring device. 3,765,239, Cl. 73-194.00r.

Olympus Optical Co., Ltd.: *See—*
Sato, Masaaki, 3,765,684.

Omae, Iwao: *See—*
Shima, Takeo; Urasaki, Takanori; and Omae, Iwao, 3,766,288.

Ommaya, Ayub; and Birsch, Arthur E., to United States of America, Health, Education and Welfare. Inflatable cervical collar for prevention of head and neck injury. 3,765,412, Cl. 128-132.000.

Omron Tateisi Electronics Co.: *See—*
Nakanishi, Tomoyuki, 3,765,523.

Omura, Etuzou: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Omura, Yoshiaki, to Mitsui Shipbuilding and Engineering Co. Ltd. Cutting torch device for gas cutting. 3,765,661, Cl. 266-23.001.

O'Neill, Joseph Thomas, to Du Pont of Canada, Limited. Apparatus for baling fibers. 3,765,324, Cl. 100-215.000.

Ookuma, Atsutaka: *See—*
Futamura, Masaharu; and Ookuma, Atsutaka, 3,765,433.

Opal, Kenneth E.; and Ley, William H., to Power Control Corporation. Method and apparatus for pulse width modulation with variable frequency modes. 3,766,497, Cl. 332-9.00r.

Orebro Pappersbruks AB: *See—*
Wager, Oleg, 3,765,783.

Organic Pollution Control Corporation: *See—*
Wenger, Harvey M., 3,765,612.

Original Hanau Quarzlampen GmbH: *See—*
Junginger, Klaus, 3,766,377.

Orlando, Vincent A.: *See—*
Marquardt, James F.; and Orlando, Vincent A., 3,765,699.

Orr, John L., to Keystone Consolidated Industries, Inc. Dual action night latch and lock. 3,765,710, Cl. 292-169.170.

Orser, David A., to General Electric Company. Light-modulating medium for image projection apparatus. 3,766,081, Cl. 252-300.000.

Orthoband Company, Inc.: *See—*
De Woskin, Irwin S., 3,765,093.

Osada, Mitsuo; Kumon, Osamu; and Nishimoto, Tatsuya, to Sumitomo Electric Industries, Ltd. Ferroelectric and piezoelectric composition. 3,766,073, Cl. 252-62.900.

Osaka Soda Co., Ltd.: *See—*
Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, 3,766,101.
Oiwa, Masayoshi; Matsumoto, Akira; Yokoyama, Kenji; Sasaki, Hiromi; Tojima, Masao; and Matsumoto, Kazuya, 3,766,149.

Osato, Kazuhiro: *See—*
Sumikama, Sadao; Osato, Kazuhiro; and Nishimura, Jiro, 3,765,238.

Osborne, Paul Wray: *See—*
Aaron, Marvin Robert; Kaneko, Hisashi; and Osborne, Paul Wray, 3,766,546.

Ostdiek, Arthur J.; and Manion, Francis M. Instrument for measurement of fluid density or composite fluid mixing ratio. 3,765,224, Cl. 73-32.00r.

Osterreichische Stickstoffwerke Aktiengesellschaft: *See—*
Stern, Gerhard; Muller, Walter; and Weinrotter, Ferdinand, 3,766,228.

Oswald, Hendrikus J.; Prevorsek, Dusan C.; Koch, Paul J.; and Segal, Leon, to Allied Chemical Corporation. Shapable fiber-reinforced low molecular weight polyethylene terephthalate. 3,765,998, Cl. 161-170.000.

Otoyo, Ryouichi: *See—*
Ojima, Masaki; Otoyo, Ryouichi; and Shiraishi, Tomohiko, 3,765,664.

Otto, Dr. C., & Comp. G.m.b.H.: *See—*
Riechert, Kurt, 3,766,018.

Ottofy, Frank B. Anti-pollution device for and method of removing oil from air vented from the crankcase of an internal combustion engine and returning the oil to the crankcase. 3,765,386, Cl. 123-119.00b.

Outboard Marine Corporation: *See—*
Arff, Uwe F., 3,765,088.
Du Bois, Chester, 3,765,657.
Ewoldt, Robert, 3,765,039.
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Ouvrier, Fritz Gunther, to Telefonaktiebolaget L M Ericsson. Arrangement to keep the range of control of a control element within desired limits. 3,766,486, Cl. 330-29.000.

Owens-Corning Fiberglas: *See—*
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Ozolins, Jekabs: *See—*
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Pabich, Richard W. Method and apparatus for attaching cabinet backs. 3,765,077, Cl. 29-432.000.

Pacht, Amos, to Partek Corporation. High pressure fluid system and nozzle and valve assembly therefore. 3,765,607, Cl. 239-124.000.

Pactide Corporation: *See—*
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Pados, Istvan, to Chemolimpex Magyar Vegyiaru Kulkereskedelmi Vallalat. Apparatus for the treatment of fluids or solutions by electric fields. 3,766,050, Cl. 204-302.000.

Padula, William V., to United States of America, Army. Hand grenade safety lock pull ring assembly. 3,765,337, Cl. 102-64.000.

Pagano, Victor H.; and Fabrykowaki, Zygmunt J., to United States of America, Army. Universal applique armor. 3,765,299, Cl. 89-36.00h.

Pagano, Victor H.; and Spiro, Harry, to United States of America, Army. Light weight ribbed composite armor. 3,765,301, Cl. 89-36.00a.

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Pallos, Ferenc M.: *See—*
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Pankratz, John M.; and Bean, Kenneth E., to Texas Instruments, Incorporated. Liquid crystal display using a moat, integral driver circuit and electrodes formed within a semiconductor substrate. 3,765,747, Cl. 350-160.000.

Pappas, Michael E. Portable door method and means. 3,765,126, Cl. 49-380.000.

Papst, Georg: *See—*
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Papst, Hermann; and Papst, Georg, to Papst-Motoren KG. Internally insulated, metal enclosed electric motor. 3,766,416, Cl. 310-43.000.

Papst-Motoren KG: *See—*
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Paraskevas, Christos G. Law enforcement simulating board game apparatus. 3,765,680, Cl. 273-134.0ag.

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Parkinson, Michael John. Measuring density by beta-particle absorption. 3,766,379, Cl. 250-395.000.

Parrent, Russell, to Airtex Products Div., United Industrial Syndicate. Air dome construction for pressure venting fuel pumps. 3,765,803, Cl. 417-540.000.

Partek Corporation: *See—*
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Parts, Leo P.; and Miller, John T., Jr., to Monsanto Research Corporation. Smoke-retardant styrene polymer compositions. 3,766,157, Cl. 260-88.00r.

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Pell, Richard A.; deceased (by Pell, Elizabeth P.; heir). Averaging apparatus. 3,766,362, Cl. 235-61.00e.
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Guenther, Kenneth L.; and Barcik, Charles P., 3,766,341.
Rampo, Redento R.: *See—*
Curado, Joseph G.; and Rampo, Redento R., 3,766,110.
Ramsdale, Roy. Apparatus for dispensing photographic chemicals. 3,765,576, Cl. 222-132.000.
Rand, Myron Joel; and Schmidt, Paul Felix, to Bell Telephone Laboratories, Incorporated. Radiation resistant coatings for semiconductor devices. 3,765,935, Cl. 117-201.000.
Rand-Whitney Packaging Corporation: *See—*
D'Alessio, Joseph R., 3,765,593.
Randall, John H., to Phillips Petroleum Company. Process and apparatus for fractionator reboiling with minimized fouling by centrifuging and decanting. 3,766,021, Cl. 203-39.000.
Rapmund, Leonard Henry: *See—*
Noord, Jacobus Andrianus Johannes Maria Van; Rapmund, Leonard Henry; and Tacken, Jan Mathieu Marie, 3,765,744.

Rarey, Kenneth W.; and Kennedy, John B., Jr., to Continental Can Company, Inc. System for measuring and controlling mixture content. 3,765,654, Cl. 259-4.000.
Rasmussen, Carl M.: *See—*
Rasmussen, Reed; and Rasmussen, Carl M., 3,765,648.
Rasmussen, Reed; and Rasmussen, Carl M. Support apparatus. 3,765,648, Cl. 254-47.000.
Rau, Gerald A.: *See—*
Sauey, Lawrence K.; Douglas, Kenneth M.; and Rau, Gerald A., 3,765,559.
Rauschenberger, Hans: *See—*
Hardt, Lothar; Muller-Wartenberg, Heinz; and Rauschenberger, Hans, 3,765,154.
Ray, Robert A.: *See—*
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Raytheon Company: *See—*
Ballard, Albert S., 3,766,557.
RCA Corporation: *See—*
Athanas, Terry George; and Anastasio, Angelo Antonio, 3,765,970.
Barbin, Robert Lloyd, 3,766,419.
Carlson, David John; and George, John Barrett, 3,766,313.
Floden, Bjorn Fritjof, 3,765,586.
Gordon, George Simon, 3,765,941.
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Ito, Roy Atsushi, 3,766,530.
Warren, Henry Ray, 3,766,328.
Re, Ronald, to Re-Kase Incorporated. Vacuum modulator control for automatic automobile transmission. 3,765,273, Cl. 74-865.000.
Re-Kase Incorporated: *See—*
Re, Ronald, 3,765,273.
Readshaw, Ronald Louis; and Lourigan, George Henry, to Union Carbide Corporation. Process for creaseproofing cellulose-containing fabric with glyoxal-urea-formaldehyde reaction product and a boron compound. 3,765,836, Cl. 8-115.700.
Reaves, David Herbert; and Walker, John Pearson, Jr., to General Electric Company. Optical energy detection system including image plane scanning system. 3,765,743, Cl. 350-7.000.
Reckitt & Colman Products Limited: *See—*
Godfrey, Keith Ernest, 3,766,263.
Recognition Equipment Incorporated: *See—*
Patterson, Joseph V., 3,766,520.
Redmore, Derek, to Petrolite Corporation. Certain dihydro pyridine phosphonates. 3,766,197, Cl. 260-297.00p.
Reed, John M.: *See—*
Hatfield, William C.; and Reed, John M., 3,766,325.
Reed, William Carroll; and Livingston, Kenneth Bratton, to Jet Research Center, Inc. Subsea cable cutter and the method of its use. 3,765,333, Cl. 102-24.0hc.
Reeve, John, to Westinghouse Canada Limited. Selection of a reference valve in a converter under special operating conditions. 3,766,464, Cl. 321-5.000.
Reeve, John, to Westinghouse Canada Limited. Electrical apparatus to control the extinction angle of valves of a converter. 3,766,465, Cl. 321-5.000.
Reeves, Marvin O. Automotive tractor unit with tiltover type cab construction. 3,765,500, Cl. 180-77.0tc.
Reflex Corporation of Canada Limited: *See—*
Hedgewick, Peter, 3,766,373.
Regan, A. Michael, to Regan Forge & Engineering Company. Casing runner tool for subsea well. 3,765,485, Cl. 166-285.000.
Regan Forge & Engineering Company: *See—*
Regan, A. Michael, 3,765,485.
Regie Nationale des Usines Renault: *See—*
Pesez, Gaston, 3,766,129.
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Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
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Reid, Robert B., to GTE Sylvania Incorporated. Method of coating cathode heaters. 3,765,939, Cl. 117-217.000.
Reilly, Bertram B. Gas scrubber. 3,765,659, Cl. 261-109.000.
Reinhold, Donald F.: *See—*
Sletzinger, Meyer; Reinhold, Donald F.; and Harmetz, Ronald, 3,766,259.
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Reiss, Albert: *See—*
Kyri, Hans; Reiss, Albert; and Suss, Josef, 3,765,931.
Reitler, Richard C. Downrigger release for deep water trolling. 3,765,118, Cl. 43-43.120.
Renckhoff, Gustav: *See—*
Bunger, Heinrich; and Renckhoff, Gustav, 3,766,227.
Rennhard, Hans H., to Plizer Inc. Polysaccharides and their preparation. 3,766,165, Cl. 260-209.00r.
Reno, Charles William: *See—*
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Renth, Ernst-Otto: *See—*
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Rentz, Albert Ward; Clark, Chesley; Diebold, James P.; and Eldridge, Judson B., to United States of America, Navy. Conductive igniter composition. 3,765,334, Cl. 102-27.00r.
Research Corporation: *See—*
Lasker, Sigmund E.; and Chiu, Marie L., 3,766,167.
Reuter, James L.; and Sandhu, Jagtar S., to Cogar Corporation. Semiconductor substrate with a planar metal pattern and anodized insulating layers. 3,766,445, Cl. 317-235.00r.
Rex Chainbelt Inc.: *See—*
Morris, John M.; and Schrader, Preston H., 3,765,532.
Reynolds Metals Company: *See—*
Bullough, Vaughn Lynn, 3,765,878.
Rhone-Poulenc S.A.: *See—*
Bonin, Yves; and Gigou, Claude, 3,766,104.
Colleuille, Yves; and Perron, Robert, 3,766,239.
Richards, Brian. Electrical contact breaker apparatus for spark ignition internal combustion engines. 3,766,340, Cl. 200-30.00a.
Richardson-Merrell Limited: *See—*
Turek, Buhuslav, 3,765,404.
Richmon, Sidney. Elevator control apparatus. 3,765,510, Cl. 187-29.00r.
Richter Gedeon Vegyeszeti Gyar Rt.: *See—*
Kisfaludy, Lajos; Patthy, Agnes, nee Lukats; Dangsi, Lajos; Fekete, Gyorgy; and Szabo, Istvan, 3,766,235.
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Hokari, Saburo, 3,765,315.
Mochimaru, Hideaki, 3,765,760.
Yamada, Hiroshi, 3,765,759.
Riebling, Eugene F., to University of Akron, The. Process for making metal spheres in oxide glasses. 3,765,853, Cl. 65-18.000.
Riechert, Kurt, to Otto, Dr. C., & Comp. G.m.b.H. Coke quenching apparatus. 3,766,018, Cl. 202-227.000.
Riechmann, Werner, to Blaupunkt-Werke GmbH. Stabilized low voltage supply circuit in solid-state T.V. receivers. 3,766,314, Cl. 178-7.30r.
Ried, Harold T., to ACF Industries, Incorporated. Sequential cam automatic railway hooper car door actuating mechanism. 3,765,341, Cl. 105-241.00c.
Rietjens, Pierre L.L.M., to Akzona Incorporated. Process and apparatus for the stufferbox crimping of yarns. 3,765,068, Cl. 28-1.700.
Riggs, R. Kent, to National-Southwire Aluminum Company. Air sampling device. 3,765,247, Cl. 73-421.500.
Riggs, Royal W. Umbrella with foldable staff. 3,765,434, Cl. 135-20.00a.
Riggs, Royal W. Tackle box holder. 3,765,632, Cl. 248-221.000.
Riker Laboratories, Inc., mesne: *See—*
Mendel, Arthur, 3,766,247.
Rilett, John W., to Powell, Maurice, Limited. Apparatus for determining distance. 3,766,518, Cl. 340-3.00r.
Rimini, Tito, to Bras S.p.A. Beverage dispenser. 3,765,569, Cl. 222-70.000.
Rimrock Corporation: *See—*
Burton, Charles A., 3,765,474.
Ripplinger, Roland E., to Honeywell Information Systems, Inc. Silicon controlled rectifier tester. 3,766,475, Cl. 324-158.50c.
Ritchey, Harold W.; and Mc Dermott, John M., to Thiokol Chemical Corporation. Rocket motor with blast tube and case bonded propellant. 3,765,177, Cl. 60-253.000.
Ritchie, Joe L.: *See—*
Bethea, Thomas J.; and Ritchie, Joe L., 3,765,160.
Rivers, Richard D., to American Air Filter Company, Inc. Carbon filter leak detector. 3,765,225, Cl. 73-40.700.
Roberts, Miron J.; and Runge, Heinz F., to Kraftco Corporation. Method and apparatus for making cheese. 3,765,090, Cl. 426-38.000.
Roberts, Robert; and Anderson, Roland Fitzhugh, to Du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene filled and unfilled molding powders and their preparation. 3,766,133, Cl. 260-41.00r.
Roberts, Thomas G.; Shatas, Romas A.; Meyer, Harry C., III; and Stettler, John D., to United States of America, Army. Laser assisted neutron generator. 3,766,004, Cl. 176-1.000.
Robic, Gabriel, to Elf Union S.A. Emulsion burner. 3,765,609, Cl. 239-405.000.
Robins, A. H., Company Incorporated: *See—*
Welstead, William John, Jr.; and Franko, Bernard V., 3,766,196.
Rocheleau, Charles E. Article storing and dispensing unit with movably mounted gate. 3,765,429, Cl. 133-5.00a.
Rockson, Thomas. Sterilizing and dryer. 3,766,397, Cl. 250-432.000.
Rode, James A., to United Nuclear Corporation. Production of uranium dioxide. 3,765,844, Cl. 423-19.000.
Rodgers, Franklin A., to Pactide Corporation. Method of manufacturing a distillation apparatus. 3,765,981, Cl. 156-210.000.
Rodgers, Paul D., to International Telephone and Telegraph Corporation. Radiant energy receiver. 3,766,481, Cl. 325-363.000.
Rody, Jean: *See—*
Heller, Hansjorg; Rody, Jean; and Keller, Ernst, 3,766,205.
Rofenachi, Kurt, to Ciba-Geigy Corporation. Certain diazalyl aliphatic esters of thiophosphoric and dithiophosphoric acids. 3,766,200, Cl. 260-302.00e.
Roff, John G.: *See—*
Samuels, Joseph P.; Hummel, Paul A.; and Roff, John G., 3,765,755.

Roger, Georges: *See—*
Budin, Jean-Pierre; and Roger, Georges, 3,765,768.

Rogers, Howard G., to Polaroid Corporation. Film assemblage for color diffusion transfer. 3,765,887, Cl. 96-3.000.

Rogerson, John R. Snowmobile with vertically adjustable skis. 3,765,498, Cl. 180-5.00r.

Rohm & Haas Company: *See—*
Kine, Benjamin B.; and Emmons, William D., 3,766,156.

Rohm, Gunter Horst. Mounting assembly for machinist vise. 3,765,668, Cl. 269-208.000.

Rohr Industries, Inc.: *See—*
Whitenack, Taylor O., Jr., 3,765,251.

Rohr, Otto, to Ciba-Geigy AG. 3-Nitro-4-phenoxy benzonitriles. 3,766,238, Cl. 260-465.00f.

Rolstad, Erik; and Jamne, Einar, to Institutt for Atomenergi. Method for the control of a boiling water reactor and a boiling water reactor for performing said method. 3,766,007, Cl. 176-56.000.

Romijn, Johannes Gerardus, to Grassos Koninklijke Maçhinenfabrieken N.V. Method for freezing products by direct-contact with an evaporating freezing agent. 3,765,188, Cl. 62-64.000.

Root, Donald S. Evaporator and/or condenser for refrigeration or heat pump systems. 3,765,192, Cl. 62-324.000.

Root, William L., to Bethlehem Corporation, The. Heat exchanger and mixer. 3,765,481, Cl. 165-92.000.

Rosar, Edward C.; and Nielsen, Irvin P. Dual bit drilling tool. 3,765,493, Cl. 175-319.000.

Rosati, Vincent J., to United States of America, Army. Laser pumping system. 3,766,492, Cl. 331-94.500.

Rose, John Brewster: *See—*
Nield, Eric; and Rose, John Brewster, 3,766,142.

Rosen, Stanley R.: *See—*
Goldbert, Donald D.; and Rosen, Stanley R., 3,765,033.

Rosenberg, David J., to Pall Corporation. Blood filter cascade. 3,765,536, Cl. 210-446.000.

Rosenberg, David J., to Pall Corporation. Dual blood filter. 3,765,537, Cl. 210-446.000.

Rosenberg, Edgar N., to United States of America, Navy. Module connectors. 3,765,353, Cl. 114-.50t.

Rosenberg, Robert; and Runge, Peter Klaus, to Bell Telephone Laboratories, Incorporated. Optical device, such as a dye laser, employing a free-flowing liquid stream. 3,766,489, Cl. 331-94.500.

Rosenburg, Charles W., Jr., to Burt, F. N., Company. Hollow walled carton. 3,765,598, Cl. 239-34.0aw.

Rosmarin, Philip F. Detergent (soap) compositions. 3,766,097, Cl. 252-552.000.

Rossi, Irving. Supporting slabs during continuous casting. 3,765,472, Cl. 164-282.000.

Rostler, Fritz S.; and White, Richard M., to Phillips Petroleum Company, mesne. Emulsions for heating asphalts and asphalt structures and methods of employing the same in the treatment of asphalts and asphalt structures. 3,766,107, Cl. 260-17.4bb.

Rostrup-Nielsen, Jens: *See—*
Bogart, Marcel J. P.; Nielsen, Adners; Rostrup-Nielsen, Jens; and Wrisberg, Johannes, 3,766,278.

Rouquie, Georges: *See—*
Bourgain, Louis; Dreyfus, Gaspard; Le Nabour, Marcel; and Rouquie, Georges, 3,765,735.

Roussel-UCLAF: *See—*
Nedelec, Lucien; and Bucourt, Robert, 3,766,248.

Roux, Roland, to Compagnie Industrielle des Lasers. Discharge tube with dismountable electrode. 3,766,487, Cl. 331-94.5pe.

Rowe, E. Riley, to Sonoco Products Company. Automatic web tension control. 3,765,584, Cl. 226-39.000.

Rowe, George E., to Emhart Corporation. Apparatus for making glassware by a press and blow technique. 3,765,862, Cl. 65-229.000.

Rowland-Hill, Edward W.: *See—*
Hyman, Myles; Sheehan, Ronald T.; and Rowland-Hill, Edward W., 3,765,157.

Ruben, Murray A. Battery charging circuit with SCR'S triggered by unijunction circuit having means for preventing unijunction from being latched on. 3,766,463, Cl. 320-23.000.

Rubinate, Frank J.: *See—*
Killoren, John J.; and Rubinate, Frank J., 3,765,907.

Rudolph, Hans: *See—*
Metzner, Wolfgang; Rudolph, Hans; Fuhr, Karl; and Schnell, Hermann, 3,766,111.

Rudolph, Paul; and Kapp, Ernst, to Metallgesellschaft Aktiengesellschaft. Power plant process. 3,765,167, Cl. 60-39.020.

Runge, Heinz F.: *See—*
Roberts, Miron J.; and Runge, Heinz F., 3,765,090.

Runge, Peter Klaus: *See—*
Rosenberg, Robert; and Runge, Peter Klaus, 3,766,489.

Ruoss, Christian William, to Combustion Engineering Inc. Control arrangement for self-closing control rod latches. 3,765,585, Cl. 226-59.000.

Rupnick, Edward J.: *See—*
Hendrickson, Ellis C.; and Rupnick, Edward J., 3,765,367.

Rushing, James M.: *See—*
Barber, Walter W.; Kassees, Kamil S.; and Rushing, James M., 3,765,692.

Rust, Lynn M.: *See—*
Maring, Blayne E.; Nicholson, James G.; and Rust, Lynn M., 3,766,524.

Rytvin, Evgeny Isaevich: *See—*
Shule, Edmund Khristianovich; Kutokov, Sergei Sergeevich; Rytvin, Evgeny Isaevich; Myagchenkov, Alexei Andreevich; Khodakovsky, Mikhail Davydovich; Bakanov, Nikolai Gavrilovich; Schevchenko, Nikolai Ivanovich; and Shiman, Oleg Petrovich, 3,765,852.

S. A. des Anciens Etablissements Paul Wurth: *See—*
Legille, Edouard; and Mailliet, Pierre, 3,765,663.

SAB Brake Regulator Company, Limited: *See—*
Dahlkvist, Nils Goran; and Sander, Nils Borje Lennart, 3,765,522.

Sabol, Edward Joseph: *See—*
Hufnagel, Robert Hughes; Pierce, Lowell Jackson; and Sabol, Edward Joseph, 3,765,178.

Saccoccio, Louis. Semi-automatic dynamically balanced gravity casting machine. 3,765,640, Cl. 249-68.000.

Sadacca, Albert V.; and Paulfus, Bernard, to Noma-World Wide, Inc. Artificial Christmas tree illuminated by optic fiber sprays. 3,766,376, Cl. 240-101.001.

Saholt, Orville J.: *See—*
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Saint-Gobain Industries: *See—*
Lecourt, Jean Albert, 3,765,857.
Sauer, Gerd; and Kunert, Heinz, 3,766,563.

Saito, Tadao; and Abe, Mitsuyuki, to Sony Corporation. Output character display device for use with audio equipment. 3,766,547, Cl. 340-366.00d.

Sajus, Lucien: *See—*
Mimoun, Hubert; De Roch, Irenee Seree; Sajus, Lucien; and Menguy, Pierre, 3,766,232.

Sakai, Masahiro: *See—*
Ito, Toshio; Nomaguichi, Tamotsu; Sakai, Masahiro; and Ito, Koji, 3,765,820.

Sakai, Shoji, to Nissan Motor Company, Limited, Atsugi Motor Parts Company Limited and Ikeda Bussan Company, Limited. Position adjustable support mechanism. 3,765,720, Cl. 297-330.000.

Sakamoto, Eiichi: *See—*
Sato, Shoi; Sakamoto, Eiichi; Watanabe, Yuji; Sakazume, Kaiichiro; and Kaneko, Tokuzo, 3,765,899.

Sakazume, Kaiichiro: *See—*
Sato, Shoi; Sakamoto, Eiichi; Watanabe, Yuji; Sakazume, Kaiichiro; and Kaneko, Tokuzo, 3,765,899.

Salamon, Theodore M.: *See—*
Bowler, Lauren L.; Salamon, Theodore M.; and Winchell, Frank J., 3,765,701.

Salmin, Valery Vasilievich: *See—*
Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moislevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.

Saltzberg, Burton R.: *See—*
Morris, Robert Charles; Napolitano, Orlando; Pasternack, Gerald Philip; and Saltzberg, Burton R., 3,766,484.

Samuels, Joseph P.; Hummel, Paul A.; and Roff, John G., to DuKane Corporation. Microimage viewer. 3,765,755, Cl. 353-27.000.

San Fernando Electric Manufacturing Co., Inc.: *See—*
Zyetz, M. Charles, 3,765,082.

Sandell, Kenneth Charles: *See—*
Hart, Raymond; and Sandell, Kenneth Charles, 3,765,787.

Sander, Nils Borje Lennart: *See—*
Dahlkvist, Nils Goran; and Sander, Nils Borje Lennart, 3,765,522.

Sanders Associates, Inc.: *See—*
Briley, Joseph C., 3,766,527.

Sandhu, Jagtar S.: *See—*
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Sandoz-Wander, Inc.: *See—*
Coombs, Robert V., 3,766,224.
Simpson, William R. J., 3,766,185.

Sands, Seymour, to Du Pont de Nemours, E. I., and Company. Finish composition for application to a continuous filament polypropylene sheet. 3,766,115, Cl. 260-29.1sb.

Sandvikens Jernverks Aktiebolag: *See—*
Westberg, Alvar Torsten, 3,765,707.

Sankyo Company Limited: *See—*
Tsukada, Kazuhiro, 3,766,233.

Sano, Reiji; Yoshimura, Susumu; Asakawa, Shirow; and Hasegawa, Katsue, to Matsushita Electric Industrial Company, Limited. Photosensitive compositions and a method for recording and directly developing a coloured image. 3,765,888, Cl. 96-27.00r.

Sansui Electric Co., Ltd.: *See—*
Itoh, Ryosuke, 3,765,504.

Santangelo, Joseph G.; Dubs, Marne A.; and Schatz, Clifford E., to Kennecott Copper Corporation. Process and apparatus for transporting mined deposits from the sea floor. 3,765,727, Cl. 302-14.000.

Sarkisov, Rafael Tevosovich: *See—*
Gilev, Vitaly Konstantinovich; Bragin, Alexandr Sergeevich; Sarkisov, Rafael Tevosovich; and Stephanian, Ernst Arakelovich, 3,765,150.

Saruhashi, Shigeru, to Hava Kogyo Kabushiki Kaisha. Chuck. 3,765,691, Cl. 279-71.000.

Sarurvatari, Hidetoshi: *See—*
Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Sarurvatari, Hidetoshi, 3,766,158.

Sasaki, Hiromi: *See—*
Oiwa, Masayoshi; Matsumoto, Akira; Yokoyama, Kenji; Sasaki, Hiromi; Tojima, Masao; and Matsumoto, Kazuya, 3,766,149.

Sasaki, Jiro, to Toshin Science Co., Ltd. Filtering method and a filtering machine therefor. 3,766,059, Cl. 210-19.000.

Sato, Kohei; and Shimazu, Shunsaku, to Matsushita Electric Industrial Co., Ltd. Flyback transformer device. 3,766,505, Cl. 336-94.000.

Sato, Masaaki, to Olympus Optical Co., Ltd. Automatic cassette tape recorder. 3,765,684, Cl. 274-4.00f.

Sato, Shoi; Sakamoto, Eiichi; Watanabe, Yuji; Sakazume, Kaiichiro; and Kaneko, Tokuzo, to Konishiroku Photo Industry Co., Ltd. Light-sensitive super-sensitized silver halide photographic emulsion. 3,765,899, Cl. 96-124.000.

Sato, Takashi. Input circuit for an automatic telephone answering device. 3,766,321, Cl. 179-6.00r.

Sato, Yohta; Matsuda, Masakata; Ohi, Yukio; and Matsumori, Toyomi, to Nippon Yakin Kogyo Company Limited. Method of producing ferro-nickel or metallic nickel. 3,765,873, Cl. 75-82.000.

Sattar, Siddiq A.: *See—*
Stargardter, Hans; Sattar, Siddiq A.; and Pilpel, Walter, 3,765,796.

Sauer, Gerd; and Kunert, Heinz, to Saint-Gobain Industries. Method and means of improving reception of vehicular window-mounted antenna. 3,766,563, Cl. 343-713.000.

Sauey, Lawrence K.; Douglas, Kenneth M.; and Rau, Gerald A., to Flambeau Products Corporation. Slush cone. 3,765,559, Cl. 220-15.000.

Saunders, Albert, to Saunders Roller Box Tool Company Limited, The. Roller box tools. 3,765,279, Cl. 82-35.000.

Saunders Roller Box Tool Company Limited, The: *See—*
Saunders, Albert, 3,765,279.

Saunier Duval: *See—*
Charron, Jean-Claude, 3,765,452.

Sauvey, Donald R.; and Sharp, Paul H., to Columbia Broadcasting System, Inc. Quadraphonic augmentation system. 3,766,317, Cl. 179-1.0gq.

Savonuzzi, Giovanni F., to Fiat Societa per Azioni. Turbine rotors. 3,765,793, Cl. 416-96.000.

Sawada, Hideo; Ohata, Keiichi; and Tsukane, Nagayoshi, to Daicel Ltd. Polyisobutylene oxide compositions. 3,766,122, Cl. 260-30.40r.

Sawada, Takehiko, to Ikegni Tekko Kabushiki Kaisha and Dai Nippon Ink Kagaku Kozyo Kabushiki Kaisha. Apparatus for manufacturing standard-length articles covered with plastic material. 3,765,811, Cl. 415-113.000.

Sawick, Walter J.: *See—*
Heffan, Howard; Bergh, Emil M.; Mauch, John W.; and Sawick, Walter J., 3,766,387.

Saye, Roland S. Marine craft steering means. 3,765,361, Cl. 114-144.00c.

Sayigh, Adhan A. R., to Upjohn Company, The. N-(cyanoethyl)polyols of methylenedianilines. 3,766,240, Cl. 260-465.00e.

Scdoris, Perry W. Hook for opening boxcar doors. 3,765,058, Cl. 24-74.0hh.

Schaaf, Thomas K.; and Daniels, Thomas J., to Pfizer Inc. Process for resolving 2-(2β-benzyloxy-methyl-3α-hydroxy-4-cyclopentene-1α-yl) acetic acid. 3,766,264, Cl. 260-520.000.

Schaberg, Richard R.; Perino, Peter R.; and Helin, Ronald P., to Statham Instruments, Inc. Low range high overload differential pressure transducer. 3,765,256, Cl. 74-99.00r.

Schaefer, Harold W.: *See—*
Brooks, Joseph F.; and Schaefer, Harold W., 3,766,347.

Schaeff, Hans. Vehicle with two earthworking attachments. 3,765,553, Cl. 214-138.00r.

Schafer, Arthur W., Sr. Apparatus for measuring piston position. 3,765,098, Cl. 33-181.0at.

Schaffer, Robert S.; and Fitzgerald, John W., Jr., to Owens-Corning Fiberglas Corporation. Apparatus for packaging linear material. 3,765,988, Cl. 156-441.000.

Schar, Albert. Light beam method for testing a clockwork mechanism. 3,765,223, Cl. 73-6.000.

Schatz, Clifford E.: *See—*
Santangelo, Joseph G.; Dubs, Marne A.; and Schatz, Clifford E., 3,765,727.

Schaumburg, Georges W. Method for protecting hot metal surface. 3,765,205, Cl. 72-46.000.

Scheer, Marcel: *See—*
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Schellekens, Jozef Remy; Ghys, Theofiel Hubert; and Depoorter, Henri, to Gevaert-Agfa N.V. Spectral sensitization of light-sensitive silver halide emulsions. 3,765,901, Cl. 96-140.000.

Schenk, Josef; Von Ehrenstein, Christian; and Moreira, Luiz Carlos, to Bosch, Robert, G.m.b.H. Starter drive for combustion engines. 3,766,453, Cl. 318-88.000.

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Schierloh, Owe; and Heinrich, Peter, to Huttenwerk Oberhausen Aktiengesellschaft. Method of producing iron-ore pellers. 3,765,869, Cl. 75-3.000.

Schiesser, Gabriel, to Maschinenfabrik und Giesserei Netstol AG. Method for closing plastic containers. 3,765,144, Cl. 53-39.000.

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Settino, Frederick A., to PPG Industries, Inc. Method of roll forming a ribbon of glass at high temperature. 3,765,858, Cl. 65-101.000.

Seymour, Samuel L., to PPG Industries, Inc. Method of liquid quenching glass sheets. 3,765,859, Cl. 65-114.000.

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Shimada, Karo, to Tokyo Buhin Kogyo Co., Ltd. Brake device having brake clearance adjusting means. 3,765,515, Cl. 188-79.sge.

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Smith, Arthur A.; Christensen, Dean E.; Campbell, Billy H.; Strickland, Raymond I.; Lopez, Bennie F.; Eckstein, Herbert P.; and Litchfield, Hart S., to United States of America, Army. Rate aided target illuminator. 3,765,752, Cl. 350-289.000.
Smith, Henry M. Fluid cushion podiatric insole. 3,765,422, Cl. 128-594.000.
Smith, Ian E.: *See—*
Metcalfe, Kenneth A.; and Smith, Ian E., 3,766,072.
Smith, Jack D., to Process Research Incorporated. Recovery of metal from rinse solutions. 3,766,049, Cl. 204-301.000.
Smith, James E.; Cole, Avean Wayne; and Douglas, Alvin G., to Mississippi State University Development Foundation Inc. Destruction of cocklebur seeds in cottonseed. 3,765,865, Cl. 71-113.000.
Smith, Peter William: *See—*
Moffett, Robin Henry; Smith, Peter William; and Vonwiller, Christopher Charles, 3,766,322.
Smith, Peter William, to Bell Telephone Laboratories, Incorporated. Radiation and pressure broadening technique for single frequency gas lasers. 3,766,491, Cl. 331-94.500.
Smith, Standish H.: *See—*
Peck, Ira J.; and Smith, Standish H., 3,765,185.
Smith, Verity C., to Vaponics Incorporated. Rinse water purification. 3,766,060, Cl. 210-64.000.
Smithkline Corporation: *See—*
Craig, Paul N.; and Zirkle, Charles L., 3,766,183.
Smolin, Edward Marvin: *See—*
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Smothers, Gary G. Portable, self-contained movie theatre. 3,765,133, Cl. 52-7.000.
Snam Progetti S.p.A.: *See—*
Sciascio, Nicola Di, 3,765,438.
Snapp, Thomas C., Jr.: *See—*
Albers, Kenneth H.; Snapp, Thomas C., Jr.; and Blood, Alden E., 3,766,118.
Snapp, Thomas C., Jr.; Blood, Alden E.; and Albers, Kenneth H., to Eastman Kodak Company. Water-soluble alkyd resins from di(2-hydroxyethoxy-acetamide)alkylethanes. 3,766,119, Cl. 260-29.20n.
Snapp, Thomas C., Jr.; and Blood, Alden E., to Eastman Kodak Company. Cyclization process. 3,766,179, Cl. 260-244.00r.
Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa Societa per Azioni: *See—*

De Angelis, Giovanni; and Marchiaro, Ettore, 3,765,339.
Sno Pac Corporation, mesne: *See—*
Newell, Keith, 3,765,321.
Snyder, Stephen L. Harness and auxiliary parachute release system. 3,765,627, Cl. 244-147.000.
Socapex: *See—*
Carre, Jacques, 3,766,513.
Societe Anonyme dite: Ethylene Plastique Courbevoie: *See—*
Lambert, Bernard; and Nicco, Adrien, 3,765,829.
Societe des Fonderies de Pont-A-Mousson: *See—*
Bram, Georges Eugene, 3,765,706.
Societe d'Etudes Scientifiques et Industrielles de l'Ille-de-France: *See-*
Thominet, Michel Leon, 3,766,178.
Societe dite: Societe le Foyer: *See—*
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Societe Etablissements Genoud & Cie: *See—*
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Societe Franco-Hispano-Americaine Francispam: *See—*
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Parisot, Michel, 3,765,528.
Societe Nationale d'Etude & de Construction de Moteurs d'Aviation (S.N.E.C.M.A.): *See—*
Chevillon, Jack Rene Paul; Gauje, Georges Maurice Celestin Alois; and Grammagnac, Jacques Leopold Emile, 3,765,953.
Societe Nationale Industrielle Aerospatiale: *See—*
Bourquardez, Gaston; and Coffy, Rene Louis, 3,765,267.
Societe Pour la Recherche et le Developpement Technologiques ("-Soret"): *See—*
Conroux, Jean-Jacques; Jonville, Christian Pierre; and Zurcher, Erwin Alair, 3,765,193.
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Sonoco Products Company: *See—*
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Sony Corporation: *See—*
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Sorensen, William W., to Western Electric Company, Incorporated. Pneumatic wire stripper hand gun. 3,765,277, Cl. 81-9.50a.
Sorm, Frantisek: *See—*
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Mc Connell, Frederick C.; Jason, George; and Armstrong, Neil J., 3,765,770.
McConnell, Frederick C.; Jason, George; and Armstrong, Neil J., 3,766,312.
Spector, Sidney, to Hoffmann-La Roche Inc. Barbituric acid antigens and antibodies specific therefor. 3,766,162, Cl. 260-112.00r.
Speidel, Blasius. Membrane-breastpiece for stethoscopes and method of manufacturing same. 3,765,503, Cl. 181-24.000.
Spencer, Robert L.; and Hill, Ewing K., to United States of America, National Aeronautics and Space Administration. Ultrasonic scanner for radial and flat panels. 3,765,229, Cl. 73-67.80s.
Sperry, Philip R.; Winter, Joseph; and Pryor, Michael J., to Olin Corporation. High strength aluminum base alloy. 3,765,877, Cl. 75-142.000.
Sperry Rand Corporation: *See—*
Beck, Ronald A., 3,765,081.
Cook, Charles E., 3,766,477.
Fisher, Raymond E.; and Cook, Albert C., 3,765,551.
Graefe, Albert D., 3,765,250.
Hotte, Gary D.; and Milligan, Gordon L., 3,766,501.
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Sperry Sun Well Surveying Company: *See—*
Kielman, Fred S., Jr., 3,765,494.
Spicer, Lauren D. Perpetual calendar. 3,765,111, Cl. 40-111.000.
Spietschka, Ernst; and Ische, Friedrich, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for preparing pure 4-bromo-3-hydroxy-quinophthalone. 3,766,190, Cl. 260-289.0qp.
Spinzak, Yair, to Yeda Research and Development Co., Ltd. Process for the preparation of alkyl 4,4'-dichlorobenzilates and 4,4'-dichlorobenzilic acid. 3,766,246, Cl. 260-473.00a.
Spiro, Harry: *See—*
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Stadelmann, Joachim P., to Chrysler Corporation. Switch responsive to brake pedal movement. 3,766,342, Cl. 200-61.890.
Stageberg, Wilfred E., to Minnesota Mining and Manufacturing Company. Strip adhesive application mechanism. 3,765,992, Cl. 156-521.000.
Staggs, Arnol: *See—*
Flores, Margarita C.; and Staggs, Arnol, 3,765,496.
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Stansberry, Richard: *See—*
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Starck, Axel Von; Husmann, Surwolf; and Gerbig, Hans Erwin, to AEG-Elotherm GmbH. Electromagnetic conveyor trough for conveying liquid metals. 3,765,798, Cl. 417-50.000.
Stargardter, Hans; Sattar, Siddiq A.; and Pilpel, Walter, to United Aircraft Corporation. Filament reinforced rotor assembly. 3,765,796, Cl. 416-244.000.
Stauffer Chemical Company: *See—*
Lee, Hwalin; Pallos, Ferenc M.; and Menn, Julius J., 3,766,208.
Steiger, Anton, to Sulzer Brothers Ltd. Hydraulic piston machine having radially disposed pistons. 3,765,252, Cl. 74-49.000.
Steimel, Richard. Centrifuge. 3,765,600, Cl. 233-20.00r.
Stein, Harold A.: *See—*
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Stein, Werner: *See—*
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Steiner American Corporation: *See—*
Bahnsen, Erwin B., 3,765,838.
Steiniger, Herman W., to Bauer Bros. Co., The. Refining process. 3,765,611, Cl. 241-18.000.
Steiniger, Herman W., to Bauer Bros. Co., The. Pulp refining system and apparatus. 3,765,613, Cl. 241-251.000.
Stempel, Edward H., to Belaco Inc. Joiner support. 3,765,634, Cl. 248-250.000.
Stenfeldt, Jan-Olof. Tool gripping and guiding device for tool exchanger for punching and nibbling machines. 3,765,291, Cl. 83-563.000.
Stenmark, Donald G.; and Wesselhoft, Robert D., to Esso Research and Engineering Company. Separation of C_8 aromatic hydrocarbons. 3,766,287, Cl. 260-668.00a.
Stephanian, Ernst Arakelovich: *See—*
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Stephens, Edward John; Hart, Ernest Vader; and Vandandaigue, Andre Maurice, to Emhart Corporation. Foreign particle inspection machine. 3,765,533, Cl. 209-73.000.
Stephenson, Lee P., to California Research Corporation. Method for processing surface detected seismic data to plotted representations of subsurface directional seismic data. 3,766,519, Cl. 340-15.5ds.
Sterling Drug Inc.: *See—*
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Stern, Gerhard; Muller, Walter; and Weinrotter, Ferdinand, to Osterreichische Stickstoffwerke Aktiengesellschaft. Process for the production of a straight-chain aliphatic-alpha-hydroxycarboxylic acid. 3,766,228, Cl. 260-413.000.
Stettler, John D.: *See—*
Roberts, Thomas G.; Shatas, Romas A.; Meyer, Harry C., III; and Stettler, John D., 3,766,004.
Stewart, Mary J., to FMC Corporation. Basic-dyeable copolyester resins prepared from ortho and para isomers of lower alkyl(sulfoalkoxy) benzoates. 3,766,143, Cl. 260-49.000.
Stillman, Robert H. Carrying and dispensing device for box-contained wire. 3,765,619, Cl. 242-129.500.
Stirling, John Andrew: *See—*
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Stockman, Richard F., to Air Preheater Company Inc., The. Ash processing system. 3,765,346, Cl. 110-8.00r.
Stoffey, Donald G.: *See—*
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Stotz, Siegfried Wilhelm: *See—*
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Strack, Hans A.: *See—*
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Strand, Robert C.; Marion, Donald L.; and Anderson, Dennis G., to Sinclair Oil Corporation. Graft polymers of low molecular weight styrene-maleic anhydride resins and heterocyclic compounds and water-soluble salts thereof. 3,766,113, Cl. 260-28.50r.
Strang, William John; and Goldsmith, Hugh Arthur, to British Aircraft Corporation. Propulsion power plant for aircraft. 3,765,179, Cl. 60-262.000.
Strehlow, Wolfgang H., to Minnesota Mining and Manufacturing Company. Apparatus for chemically polishing crystals. 3,765,984, Cl. 156-345.000.
Strepparola, Ezio: *See—*
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Strickland, Barney R.; and Turner, David W., to Esso Research and Engineering Company. Self-powered sample probe. 3,765,226, Cl. 73-53.000.
Strickland, Raymond I.: *See—*
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Stromberg-Carlson Corporation: *See—*
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Strozyk, John W., to United States of America, Army. Lu:Nd: Yag laser system and material. 3,766,490, Cl. 331-94.500.
Strunk, Larry E., to Tenneco, Inc. Sound attenuating muffler. 3,765,506, Cl. 181-44.000.
Struss, Leigh A., to Martin Welding, Inc. Tank liner with curved flanges, apparatus and method for making same. 3,765,211, Cl. 72-214.000.
Stryker, Harvey I.: *See—*
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Studley, Edward: *See—*
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Stull, Norton B. Twist release safety cap. 3,765,578, Cl. 222-546.000.
Stumpf, Karl. Readily cleanable roller. 3,765,070, Cl. 29-116.00r.
Stungis, George E.; Merker, Steve L.; Parish, Harlis A., Jr.; and Striegel, Richard G., to Brown & Williamson Tobacco Corporation. Puffing of tobacco. 3,765,425, Cl. 131-140.00p.
Su, Aaron Chung Liong, to Du Pont de Nemours, E. I., and Company. Preparation of polycyclopentadiene. 3,766,161, Cl. 260-93.100.
Sudworth, James L., to British Railways Board. Electric cells and batteries. 3,765,945, Cl. 136-83.000.
Sueyoshi, Hiromu: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.
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Sugiyama, Kohei: *See—*
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Sugiyama, Shichiro, to Kawaguchi, Ltd. Mold clamping mechanism for molding machine. 3,765,812, Cl. 425-150.000.
Suitt, L. T. Carrier rack for pick up trucks. 3,765,713, Cl. 296-3.000.
Sullivan, James P.: *See—*
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Sulzer Brothers Limited: *See—*
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Sulzer Brothers Ltd.: *See—*
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Sumida, Setsujiro; and Hachiya, Tomoyoshi, to Ajinomoto Co., Inc. Process for preparing imidazoline compounds. 3,766,203, Cl. 260-309.600.
Sumikama, Sadao; Osato, Kazuhiro; and Nishimura, Jiro, to Shawa Denko K.K. Heat flow meter. 3,765,238, Cl. 73-190.00h.
Sumitomo Chemical Company Limited: *See—*
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Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Nagaoka, Yoshihiko; and Zinpo, Kiyokazu, 3,766,265.
Ueda, Kenzo; Mizutani, Toshio; Itaya, Nobushige; and Okuno, Yositosi, 3,766,218.
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Sun Chemical Corporation: *See—*
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Suss, Josef: *See—*
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Suzuki, Yasoji, to Tokyo Shibaura Electric Co., Ltd. Binary full adder-subtractors. 3,766,371, Cl. 235-175.000.
Suzuki, Yasoji; and Hirasawa, Masataka, to Tokyo Shibaura Electric Co., Ltd. Counter using insulated gate field effect transistors. 3,766,408, Cl. 307-223.00c.
Svensson, Lars-Ake Erling: *See—*
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Sweeney, Richard F.: *See—*
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Swinehart, Carl F.; and Sfiligoj, Marko, to Kewanee Oil Company. Crystalline materials. 3,766,080, Cl. 252-300.000.
Swinyar, Theodore C.; and Warner, Chester J. Stethoscope hanger and heater. 3,766,361, Cl. 219-521.000.
Swodenk, Wolfgang: *See—*
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Szinai, Stephen Slomo; and Chakrabarti, Jiban Kumar, to Lilly, Eli, and Company. 2-Hydrazono-1-adamantane acetic acids. 3,766,262, Cl. 260-518.00r.
Sztari, Charles. Sewing machine conversion assembly. 3,765,350, Cl. 112-122.000.
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro. $MgCO_3$ addition to $CaSO_4$ containing sea water to prevent corrosion. 3,766,019, Cl. 203-7.000.
Tabata, Norimasa: *See—*
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Tadao, Isono, to Bell & Howell Japan, Ltd. Focus adjusting device for camera or cine camera. 3,765,767, Cl. 356-8.000.
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Takashima, Yoshiro: *See—*
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Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Car body drying apparatus. 3,765,104, Cl. 34-229.000.
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Takezawa, Isoe; Muto, Masataro; and Mori, Koichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Apparatus and method of constructing marine float structures. 3,765,359, Cl. 114-77.00a.
Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Exposure control device. 3,765,312, Cl. 95-10.0ce.
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Medovar, Boris Izrailevich; Alferov, Jury Fedorovich; Schupak, Grigory Bentsionovich; Lanevsky, Valery Evgenievich; Dykan, Vitaly Grigorievich; Berezovsky, Mikhail Elevich; Baglai, Vitaly Mikhailovich; Shuruev, Lev Andreevich; Emelyanenko, July Georgievich Khasin, Kim Moiselevich; Lugovsky, Vladimir Ivanovich; Salmin, Valery Vasilievich; Marjuschenko, Vilen Fedorovich; Shaburov, Fedor Fedorovich; Tamozhnikov, Georgy Vasilievich; Popov, Viktor Andreevich; and Semin-Vadov, Gennady Mikhailovich, 3,766,304.

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Tantam, Donald Harry, to British Oxygen Company Limited, The. Vacuum-insulated pipeline. 3,765,705, Cl. 285-47.000.

Taplin, William H., III; Lindblom, Robert O.; and Caskey, Terry L., to Dow Chemical Company, The. Battery having a molten alkali metal polysulfide catholyte and carbon coated metallic electrode for use therein. 3,765,944, Cl. 136-83.00r.

Tartaglia, Peter: *See—*
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Tarui, Tasuo; and Komiya, Yoshio, to Kogyo Gijutsuin. Integrated circuits comprising lateral transistors and process for fabrication thereof. 3,766,446, Cl. 317-235.00r.

Tashiro, Chiaki: *See—*
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Tashjian, Artin. Combined soldering gun support and tip cleaner. 3,765,047, Cl. 15-118.000.

Tashjian, Harry J.: *See—*
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Taub, Bernard, to Allied Chemical Corporation. Polyurethane elastomers prepared from 4,7-methylene-bis(cyclohexyl isocyanate), polyol and methylene dianiline. 3,766,148, Cl. 260-77.5am.

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Taylor, Harold L.; Marshall, John M.; and Veslocki, Timothy A., to Inland Steel Company. Beam quenching apparatus and method. 3,765,660, Cl. 260-6.00r.

Taylor, James A. Non-skid scaffold board pad. 3,765,509, Cl. 182-222.000.

Taylor, Kenneth M.; and Palicka, Richard J., to Carborundum Company, The. Dense carbide composite for armor and abrasives. 3,765,300, Cl. 89-36.00a.

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Taylor, Richard Francis, to Anglo-Transvaal Consolidated Investment Company Limited. Rock boring machine having driven rotors with swinging hammers. 3,765,725, Cl. 299-56.000.

Te Winkel, Jan; and Esser, Leonard Jan Maria, to U.S. Philips Corporation. Current divider. 3,766,543, Cl. 340-347.0da.

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Vandenberg, Jacob. Internal/external combustion engine. 3,765,382, Cl. 123-34.00a.
Vaponics Incorporated: *See—*
Smith, Verity C., 3,766,060.
Vargo, John W., to Filter Dynamics International, Inc. Dual-compartment package. 3,765,527, Cl. 206-44.00r.
Varta Aktiengesellschaft: *See—*
Lauck, Helmut, 3,765,950.
Vass, Alexander A. Sustaining belt for an instrument for admintering fluid into the intestinal tract per rectum. 3,765,401, Cl. 128-1.00r.
Vassilev, Petro Gueorguiev, to Fizitcheski Institut & Aneb Pri Ban. Method and apparatus for producing super-low temperatures. 3,765,186, Cl. 62-3.000.
VEB Pentacon Dresden Kamera- und Kinowerke: *See—*
Jurenz, Rolf; and Kodalle, Horst, 3,765,310.
Veenendaal, Cornelis T.: *See—*
Peterson, Dean McCormack; and Veenendaal, Cornelis T., 3,765.756.
Velenture, Gerard Johannes Petrus: *See—*
Didde, Alfonsus Augustinus Maria; and Velenture, Gerard Johannes Petrus, 3,766,425.
Veltman, Preston Leonard, to Grace, W. R., & Co. Removal of ions from liquids. 3,766,034, Cl. 204-149.000.
Vencil, Naylan N., to Dresser Industries, Inc. Method and apparatus for producing dual zone oil and gas wells. 3,765,483, Cl. 166-265.000.
Vennola, Jorma, to Columbia Broadcasting System, Inc. Stacking toy with inner and outer stacking components. 3,765,121, Cl. 46-17.000.
Verdier, Henri, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Asymmetrical tire casing. 3,765,468, Cl. 152-352.000.
Vernon Instruments Company Limited: *See—*
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Veslocki, Timothy A.: *See—*
Taylor, Harold L.; Marshall, John M.; and Veslocki, Timothy A., 3,765,660.
Vial, Georges, to Elvico S.A. Watch case cover spring. 3,765,165, Cl. 58-101.000.
Victor Company of Japan, Ltd.: *See—*
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Villarreal, David: *See—*

Celada, Juan; Villarreal, David; and MacKay, Patrick W., 3,765,872.

Vincent, Jean Gabriel; and Thevenin, Claude Gabriel Jean, to International Standard Electric Corporation. Color TV focusing circuit. 3,766,429, Cl. 315-31.00r.

Virkhaus, Rein, to Eastman Kodak Company. Heterocyclic photoconductors containing O, S or Se. 3,765,882, Cl. 96-1.500.

Vision Wrap Industries, Inc.: *See*—
Brieske, Bernard F., 3,765,597.

Vitale, Eupremio; and Guerra, Guido, to Alfa Farmaceutici S.p.A. Procedure for enzymatic production of semi-synthetic penicillins. 3,766,009, Cl. 195-29.000.

Vitali, Romano: *See*—
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Vitalis, Emil Alfred: *See*—
Pietsch, Gerhard Josef; and Vitalis, Emil Alfred, 3,766,102.

Voda, Edward R.; and Johnson, Bernard A., to TRW Inc. Metallized capacitor with wire terminals. 3,766,451, Cl. 317-260.000.

Voelker, James E.; and Cisar, James R., to Standard Oil Company. Conduit support and spacer means. 3,765,629, Cl. 248-68.0cb.

Voelkerding, Frank J.; Voelkerding, Maynard O.; and Voelkerding, John J. Trailer hitch guiding device. 3,765,703, Cl. 280-477.000.

Voelkerding, John J.: *See*—
Voelkerding, Frank J.; Voelkerding, Maynard O.; and Voelkerding, John J., 3,765,703.

Voelkerding, Maynard O.: *See*—
Voelkerding, Frank J.; Voelkerding, Maynard O.; and Voelkerding, John J., 3,765,703.

Vogel, Christian: *See*—
Kuhne, Manfred; and Vogel, Christian, 3,766,182.

Vogt, Kuno J. Compartmented key holder. 3,765,200, Cl. 70-456.00r.

Volkswagenwerk Aktiengesellschaft: *See*—
Dzimoba, Willy; Beole, Rainer; Wolf, Gerhard; and Dreyer, Gunter, 3,765,436.

Vollet, George L., to Philamon Laboratories, Inc. Method for making tuning fork resonator. 3,765,072, Cl. 29-169.500.

Von Ehrenstein, Christian: *See*—
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Von Starck, Axel; Husmann, Surwolf; Gerbig, Hans-Erwin; and Schnake, Friedrich, to AEG-Elotherm GmbH. Electromagnetic conveyor trough. 3,765,797, Cl. 417-50.000.

Vonwiller, Christopher Charles: *See*—
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Voorheis, Temple S.: *See*—
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Vorbruggen, Helmut, to Schering AG. N^6-(chlorobuten-2-yl)-adenosines and processes for the preparation thereof. 3,766,168, Cl. 260-211.50r.

Voss, Peter; Platzoeder, Karl; and Porst, Alfred, to Siemens Aktiengesellschaft. Thyristor. 3,766,450, Cl. 317-235.00r.

Voss, Robert C.: *See*—
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Vossen, Franz. Cutting apparatus. 3,765,286, Cl. 83-284.000.

Vulcan Corporation: *See*—
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Waak, Gerald A., to Aluminum Specialty Company. Toy toaster. 3,765,120, Cl. 46-14.000.

Wada, Toshio; and Shindo, Yasuhiro, to Matsushita Electric Industrial Co., Ltd. Flame-proof coated resistors. 3,766,508, Cl. 337-163.000.

Wade, Charles Gary, to ICI America, Inc. Water-in-oil emulsion type explosive compositions having strontium-ion detonation catalysts. 3,765,964, Cl. 149-2.000.

Wadia, Aspi B.: *See*—
Carter, William C.; Hsieh, Edward P.; and Wadia, Aspi B., 3,766,521.

Wager, Oleg, to Perstorp AB and Orebro Pappersbruks AB. Composite drain to be used in soil types having low water permeability. 3,765,783, Cl. 404-2.000.

Waggener, Herbert Atkin: *See*—
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Wagner Electric Corporation: *See*—
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Wainer, Eugene: *See*—
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Wakamatsu, Hachiro; Uda, Jyunko; and Yamagami, Nobuyuki, to Ajinomoto Co., Inc. Method of producing N-acyl-alpha-amino acids. 3,766,266, Cl. 260-534.00c.

Wald, Quentin R., to General Dynamics Corporation. Ship steering control system. 3,765,363, Cl. 114-151.000.

Waldmann, Helmut; Scherdtel, Wulf; and Swodenk, Wolfgang, to Bayer Aktiengesellschaft. Process for the preparation of epsilon-caprolactone. 3,766,212, Cl. 260-343.000.

Waldrum, John E., to Amchem Products, Inc. Rotary engine. 3,765,378, Cl. 123-8.150.

Walker, John H.; and Bailey, Fay W., to Phillips Petroleum Company. Blends of block polymers and microcrystalline waxes. 3,766,114, Cl. 260-28.50b.

Walker, John Pearson, Jr.: *See*—
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Walker, Thomas, Limited: *See*—
Cruse, Adrian Robert, 3,765,062.

Wall & Leigh Thermoplastics Limited: *See*—
Johnson, Maurice Vivian, 3,765,054.

Wall, Robert G.; and Kemp, Jacob D., to Chevron Research Company. Process for obtaining isopentane from butane, hexane or mixtures thereof. 3,766,292, Cl. 260-676.00r.

Wallace, Thomas Joseph: *See*—
Ilnyckyj, Stephan; and Wallace, Thomas Joseph, 3,765,849.

Wallberg, Eric W., to Forenade Fabriksverken. Device for the protective charging of case-less cartridges. 3,765,298, Cl. 89-34.000.

Walles, Sten, to AGA Aktiebolag. Optical device. 3,765,742, Cl. 350-7.000.

Wallischeck, Karl H.: *See*—
Kudasch, George; and Wallischeck, Karl H., 3,765,794.

Walraven, Thomas A.; Maropis, Nicholas; Elmore, William C.; and Devine, Janet, to Aeroprojects Incorporated. Welding apparatus. 3,765,589, Cl. 228-1.000.

Walter, Dietmar: *See*—
Hartel, Gunter; and Walter, Dietmar, 3,765,658.

Walters, William L., to General Motors Corporation. Electronic combination lock. 3,766,400, Cl. 307-10.0at.

Walther, John S., to Hewlett-Packard Company. Elementary floating point cordic function processor and shifter. 3,766,370, Cl. 235-156.000.

Wanat, Charles T., to A-Nu, Inc. Apparatus for cleaning filter elements or the like. 3,765,051, Cl. 15-302.000.

Wankel GmbH: *See*—
Froede, Walter; Wilmers, Gottlieb; and Dekitsch, Anton, 3,765,392.
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Ward, George W.: *See*—
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Warkentin, Aaron James. Semiautomatic tray packer for fruit. 3,765,149, Cl. 53-160.000.

Warll, Ronald T.: *See*—
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Warner, Gene: *See*—
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Warner, Raymond M., Jr.: *See*—
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Ercoli, Alberto; Gardi, Rinaldo; and Vitali, Romano, 3,766,223.

Warren, Henry Ray, to RCA Corporation. Slant track rotating head recorder-reproducer system for selective retention of special information. 3,766,328, Cl. 179-100.20t.

Warren, Loyal D., to United States Steel Corporation. Apparatus for marking a moving elongated workpiece. 3,765,325, Cl. 101-6.000.

Warren, Raymond W., to United States of America, Army. Resonant cavity wave fluid compressor. 3,765,182, Cl. 60-412.000.

Wasa, Kiyotaka; and Hayakawa, Shigeru, to Matsushita Electric Industrial Co., Ltd. Method of producing piezoelectric thin films by cathodic sputtering. 3,766,041, Cl. 204-192.000.

Wasley, William L.: *See*—
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Watanabe, Susumu: *See*—
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Watanabe, Tsutomu: *See*—
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Watanabe, Yasuo; Asano, Hiroaki; and Eto, Kunihiko, to Toyoda Koki Kabushiki Kaisha. System for producing a three dimension surface. 3,766,369, Cl. 235-151.110.

Watanabe, Yuji: *See*—
Sato, Shoi; Sakamoto, Eiichi; Watanabe, Yuji; Sakazume, Kaiichiro; and Kaneko, Tokuzo, 3,765,899.

Waters, William J.: *See*—
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Watkin, Bernard Curtis. Lumbar support pads. 3,765,721, Cl. 297-460.000.

Watson, Alan Reed, to Electro-Voice, Incorporated. Shock insensitive transducer. 3,766,333, Cl. 179-115.50r.

Watson, John Merza. Apparatus and method of charge-particle spectroscopy for chemical analysis of a sample. 3,766,381, Cl. 250-283.000.

Watson, Norman Leonard, to Imperial Chemical Industries, Limited. Stabilised chlorinated rubber. 3,766,137, Cl. 260-45.80a.

Watson, Stewart C.; and Bowman, Thomas C., to Watson-Bowman Associates, Inc. Sealing member. 3,765,784, Cl. 404-64.000.

Watson, Thomas A. W. K. Rotary mechanical translating device employing rotary releasers. 3,765,269, Cl. 74-682.000.

Watson-Bowman Associates, Inc.: *See*—

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Watt, Gordon James. Outlet restrictor hydrostatic bearing. 3,765,732, Cl. 308-9.000.
Watt, Richard L., to Cubic Corporation. Computing digital averaging phase meter. 3,766,555, Cl. 343-14.000.
Watts, Max W., to Aid Corporation. Quick disconnect seat track cargo tie down. 3,765,637, Cl. 248-361.00a.
Watts, Oran A., III: *See—*
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Weaver, Max A.; and Pridgen, Herman S., to Eastman Kodak Company. Polyester fibers dyed with monoazo compounds. 3,765,830, Cl. 8-41.00c.
Webb, Howard A., 49% to Morris, Mary E. Electronic voice box apparatus. 3,766,318, Cl. 179-1.0al.
Webber, J. Alan; and Van Heyningen, Earle M., to Lilly, Eli, and Company. Certain delta-3 cephalosporin compounds. 3,766,177, Cl. 260-243.00c.
Weber, Fritz; and Schiewek, Peter, to Siemens Aktiengesellschaft. Predetermined processing length in a numerically controlled machine tool. 3,766,368, Cl. 235-151.110.
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Weill & Reineke G.m.b.H.: *See—*
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Weisz, Paul B.; and Silvestri, Anthony J., to Mobil Oil Corporation. Demetalation of hydrocarbon charge stocks. 3,766,054, Cl. 208-89.000.
Wellborn, Hadley W., Jr. Method of detecting and locating corrosion sites. 3,766,040, Cl. 204-180.00r.
Welstead, William John, Jr.; and Franko, Bernard V., to Robins, A. H., Company Incorporated. 3-(2-Pyridyl) pyrrolidines and pyrrolines. 3,766,196, Cl. 260-295.0ca.
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Werner, Lawrence H.; and Trocciola, John C., to United Aircraft Corporation. Fuel cell system. 3,765,946, Cl. 136-86.00c.
Wertheimer, Harry P.: *See—*
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West, Peter; and Woodville, Mary C., to Dow Chemical Company, The. Line earth metal compounds from organotin compounds. 3,766,281, Cl. 260-665.00r.
West, Robert E.; and Kantebet, Kishore V., to Cascade Industries, Incorporated. Skimmer for swimming pools. 3,765,534, Cl. 210-169.000.
Westberg, Alvar Torsten, to Sandvikens Jernverks Aktiebolag. Pipe joint. 3,765,707, Cl. 285-336.000.
Westerling, David E. Apparatus for stacking or unstacking containers. 3,765,546, Cl. 214-6.0ba.
Westerlund, Gothe O., to Chemech Engineering Ltd. Electrolytic cell system including upper and lower reacting chambers. 3,766,044, Cl. 204-268.000.
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Weyde, Edith; Scheibitz, Maria; Meyer, Rudolf; and Matejec, Reinhart, to Agfa-Gevaert Aktiengesellschaft. Organic hydrogen peroxide addition compounds ion vesicular image formation processes. 3,765,890, Cl. 96-50.000.
Weyer, Paul P. Industrial machine press having multi post structure providing open work area freely accessible from three sides. 3,765,322, Cl. 100-53.000.
Whalen, James J. Two-riser heating and cooling unit. 3,765,476, Cl. 165-16.000.
Whalen, James J. Four riser heating and cooling unit. 3,765,478, Cl. 165-50.000.
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White, William Frederick, to International Business Machines Corporation. Self-aligning object placement apparatus. 3,765,542, Cl. 214-1.0bt.
Whitehouse, Harper John, to United States of America, Navy. Feedback-type acoustic surface wave device. 3,766,496, Cl. 331-107.00a.
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Wiczer, Max. Lock anti-pick device. 3,765,199, Cl. 70-423.000.
Widdig, Arno; Kuhle, Engelbert; Scheinpflug, Hans; Grewe, Ferdinand; Kaspers, Helmut; and Frohberger, Paul Ernst, to Bayer Aktiengesellschaft. Ureidophenylisothioureas. 3,766,243, Cl. 260-470.000.
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Wilson, Harold K. Instrument mounting clamp. 3,765,628, Cl. 248-27.000.

Wilson, Homer M., to Petrolite Corporation. Corrosion ratemeter. 3,766,042, Cl. 204-195.00c.

Wilson, John E., to Carborundum Company, The. Refractory faced blast furnace wear element. 3,765,662, Cl. 266-27.000.

Wilson, Neel: *See—*
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Wilson, Roger Allan, to Du Pont de Nemours, E. I., and Company. Fluid stripping devices. 3,765,195, Cl. 68-175.000.

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Witsiepe, William K., to Du Pont de Nemours, E. I., and Company. Segmented thermoplastic copolyester elastomers. 3,766,146, Cl. 260-75.00r.

Wittman, John P., to International Telephone and Telegraph Corporation. Digital dial pulse distortion corrector. 3,766,323, Cl. 179-16.00e.

Wixon, Harold Eugene, to Colgate-Palmolive Company. 1,2-Alkanediol containing fabric softening compositions. 3,766,062, Cl. 252-8.700.

Woelich, Marvin E. Variable ring gauge. 3,765,097, Cl. 33-178.00r.

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Wolfe, Robert N.; Palmer, Beverly F.; Hoadley, Harvey O.; and Van Heyningen, Roger S., to Eastman Kodak Company. Method and apparatus for fabricating radiation-redistributive devices. 3,765,281, Cl. 83-5.000.

Wolfram, Adolf E., to General Electric Company. Signal seeking tuner control system. 3,766,483, Cl. 325-470.000.

Wolgemuth, Larry G., to Atlantic Richfield Company. Condensation of cyclic nitrile carbonates with fluoride compounds. 3,766,147, Cl. 260-77.50r.

Wollangk, Edward G.: *See—*
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Woller, William Henry: *See—*
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Wolley, Hoyt B. Portable load supporting apparatus. 3,765,630, Cl. 248-165.000.

Wollner, Josef, to Bergner, Richard. Pressure head indicator for machine tools. 3,765,204, Cl. 72-31.000.

Wolski, Adolph J., to Ni Tec, Inc., mesne. Electron beam scan converter. 3,766,426, Cl. 315-12.000.

Woods, Foulk: *See—*
Vandenberg, Edwin J.; and Woods, Foulk, 3,766,091.

Woodville, Mary C.: *See—*
West, Peter; and Woodville, Mary C., 3,766,281.

Work, John S., to American Pipeline Equipment Company. Internal pipe line-up clamp. 3,765,665, Cl. 269-27.000.

World-Wide Paper Reclamation, Inc., mesne: *See—*
Gleason, C. Roy; and Thomas, Gordon A., 3,766,001.

Worrell, Robert J.: *See—*
Ferris, Donald L.; and Worrell, Robert J., 3,765,124.

Woulds, Michael J.: *See—*
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Wright, Hazel H.: *See—*
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Schopfer, Walter S.; and Wuerth, Dietrich P., 3,766,540.

Wulfers, Thomas F., to Shell Oil Company. Diurethane-diurea-thickened grease-compositions. 3,766,070, Cl. 252-51.50a.

Wulfers, Thomas F., to Shell Oil Company. Diurethane-diurea-thickened greased-compositions. 3,766,071, Cl. 252-51.50a.

Wunsch, Gerd: *See—*
Peck, Fritz; Fuchs, Hugo; Kahr, Kurt; and Wunsch, Gerd, 3,766,038.

Xerox Corporation: *See—*
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Harrison, Larry, 3,765,638.
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Weigl, John W., 3,765,757.

Xonics, Inc.: *See—*
Morsell, Arthur Lee; and Moise, Norton L., 3,766,385.

Yahano, Kanji: *See—*
Kushima, Hosei; and Yahano, Kanji, 3,765,955.

Yaita, Masato, to Sekisui Plastic Co., Ltd. Apparatus having plural mold members for producing shaped articles of foamed thermoplastic resin. 3,765,814, Cl. 425-233.000.

Yaku, Tadao: *See—*
Baba, Takeshi; Yaku, Tadao; Nakajima, Hisao; Kishimoto, Toshihiko; and Yoshida, Kenichi, 3,766,378.

Yale, Harry Louis; and Petigara, Ramesh B., to Squibb, E. R., & Sons, Inc. 5,11-Dihydrodibenzoxa (or thia) zepine derivatives. 3,766,210, Cl. 260-333.00r.

Yamada, Hiroshi, to Ricoh Co., Ltd. Reader printer. 3,765,759, Cl. 355-45.000.

Yamagami, Nobuyuki: *See—*
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Yamagishi, Hidehisa; and Watanabe, Tsutomu, to Nippon Kokan Kabushiki Kaisha. Acidic bath for electroplating zinc. 3,766,024, Cl. 204-55.00r.

Yamagishi, Kazuo: *See—*
Eda, Shinjiro; Iwabuchi, Hiroshi; Yamagishi, Kazuo; and Nakagawa, Keiiti, 3,765,871.

Yamaguchi, Hiroji: *See—*
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Yamaguchi, Kazuo; Tanaka, Toru; Okano, Shigeaki; Enokido, Nobuo; and Sarurvatari, Hidetoshi, to Mitsushiti Chemical Industries, Ltd. Process for polymerization of olefins. 3,766,158, Cl. 260-88.20r.

Yamaguchi, Yuzo; Ito, Hideichi; Watanabe, Susumu; Komatsu, Akira; and Yoshida, Toshio. Water soluble monascus pigment. 3,765,906, Cl. 426-18.000.

Yamamoto, Hiroshi: *See—*
Komai, Hisataka; Usui, Tatuo; Hosozawa, Hirosi; Kimura, Nobuhiro; Yamamoto, Hiroshi; and Nakata, Tetsuya, 3,766,101.

Yamamoto, Motoyuki: *See—*
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Yamamoto, Takashi: *See—*
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Yamanouchi Pharmaceutical Co., Ltd.: *See—*
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Yamanouchi, Saburo; Yasuno, Kiyoshi; Katsuki, Hiroshi; and Terazawa, Tskayuki, to Sumitomo Chemical Company, Limited. Reinforced polypropylene composition an its production. 3,766,135, Cl. 260-41.0ag.

Yamanoughi, Teruo: *See—*
Endo, Ichiro; and Yamanoughi, Teruo, 3,765,883.

Yamashita, Sadahiko; Anbe, Toshi; Hosokawa, Yoshihiro; and Nakano, Tomoyasu, to Matsushita Electric Industrial Company, Limited. Semiconductor pulse oscillating device. 3,766,495, Cl. 331-101.000.

Yang, Hung Han: *See—*
Lyon, John Bennett; and Yang, Hung Han, 3,765,808.

Yannucci, Dean A.; and Van Nice, Robert I., to Westinghouse Electric Corporation. Interleaved transformer winding having three parallel connected conductors. 3,766,504, Cl. 336-70.000.

Yashica Co., Ltd.: *See—*
Takahashi, Makoto; Hashimoto, Takao; and Takahashi, Akinori, 3,766,412.

Yasuno, Kiyoshi: *See—*
Yamanouchi, Saburo; Yasuno, Kiyoshi; Katsuki, Hiroshi; and Terazawa, Takayuki, 3,766,135.

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Yeda Research and Development Co., Ltd.: *See—*
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Yeiser, Andrew S. Method for control of marine fouling. 3,766,032, Cl. 204-147.000.

Yelin, Robert Emil: *See—*
Sitver, Leonard Allan; and Yelin, Robert Emil, 3,765,834.

Yoder, Elmon E.: *See—*
Morrison, John E., Jr.; and Yoder, Elmon E., 3,765,424.

Yokogawa Electric Works, Ltd.: *See—*
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Yoshimura, Kiyotaka; Asano, Shiro; Honda, Tadatoshi; and Tsuchiya, Ryoji, to Mitsui Toatsu Chemicals, Incorporated. Process for the regeneration of catalyst for hydration of nitrile compounds. 3,766,088, Cl. 252-412.000.

Yoshimura, Susumu: *See—*
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Yoshitomi Pharmaceutical Industries, Ltd.: *See—*
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Yotsumoto, Takashi: *See—*
Miyazaki, Toshio; Omura, Etuzou; Katakabe, Kyoku; Yotsumoto, Takashi; Ikeda, Fumiaki; Takashima, Yoshiro; Makita, Minoru; Iwase, Kenji; Tsutsumiuti, Hideo; Sueyoshi, Hiromu; and Maesaka, Tomio, 3,765,818.

Young, David E., to Schlumberger Technology Corporation. Velocity sensitive safety valve mechanism. 3,765,443, Cl. 137-460.000.

Young, Dean Arthur, to Union Oil Company of Calif. Hydrocarbon conversion method. 3,766,056, Cl. 208-111.000.

Young, Larry L. Animal carrying device for motorcycles. 3,765,375, Cl. 119-96.000.

Young, Richard W., to Polaroid Corporation. Silver transfer diffusion process. 3,765,889, Cl. 96-29.00r.

Yurimoto, Juntaro; Ito, Ikoh; Kiku, Takashi; Doi, Toshiki; and Sekihara, Takeshi, to Sumitomo Chemical Company, Limited. Resin compositions containing mainly polyvinyl chloride suitable for producing battery separator. 3,766,106, Cl. 260-17.00a.

Yzerman, Henk, to Bausch & Lomb Incorporated. Stereo-photogrammetric system. 3,765,094, Cl. 33-1.00a.

Zahnradfabrik Friedricheshafen Aktiengesellschaft: *See—*
Bauknecht, Otto; and Horl, Adolf, 3,765,202.

Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Fischer, Alois; and Hill, Franz, 3,765,303.
Lang, Armin; and Wiedemann, Erwin, 3,765,181.

Zaid, Melvin, to Colt Industries Operating Corporation, mesne. Cylinder for revolvers. 3,765,116, Cl. 42-89.000.

Zak, Henry; and Conner, Donald E., to Van Dyk & Company, Incorporated. Quaternary halides of gluconamides. 3,766,267, Cl. 260-561.00b.

Zak, Janusz M.: *See—*
Wickerson, John T. R.; and Zak, Janusz M., 3,765,908.

Zakhi, Lester. Polish can. 3,765,048, Cl. 15-258.000.

Zakrewsky, Czeslaw; Taubken, Werner; and Muller, Erwin, said Zakrewsky and said Taubken assors. to said Muller, Erwin. Electromagnetically operated stapler. 3,766,455, Cl. 318-135.000.

Zarraga, Carlos Alberto. Unit of orientation for peripheral ophthalmometry. 3,765,753, Cl. 351-6.000.

ZCM Limited: *See—*
Zink, Henry R., 3,766,331.

Zeiss-Stiftung, Carl: *See—*
Burboeck, Hans Peter, 3,765,745.

Zeuner, Kenneth W., to Control Concepts Inc. Controlled air gap in a solenoid operated valve. 3,765,644, Cl. 251-129.000.

Ziegler, Georg; and Pfarrwaller, Erwin, to Sulzer Brothers Limited. Gripper shuttle carrier. 3,765,458, Cl. 139-126.000.

Zink, Henry R., to ZCM Limited. Hearing aid for producing sensations in the brain. 3,766,331, Cl. 179-107.00r.

Zinpo, Kiyokazu: *See—*
Shiraishi, Tatsuo; Kishiwada, Susumu; Shimizu, Shinkichi; Honmaru, Shigeru; Nagaoka, Yoshihiko; and Zinpo, Kiyokazu, 3,766,265.

Zirkle, Charles L.: *See—*
Craig, Paul N.; and Zirkle, Charles L., 3,766,183.

Zocholl, Stanley L., to I-T-E Imperial Corporation. Multivibrator for static relays having linear time dial. 3,766,436, Cl. 317-33.00r.

Zurcher, Erwin Alair: *See—*
Conroux, Jean-Jacques; Jonville, Christian Pierre; and Zurcher, Erwin Alair, 3,765,193.

Zuurveen, Franz, to U.S. Philips Corporation, mesne. Dry shaver cutting head. 3,765,086, Cl. 30-43.920.

Zyetz, M. Charles, to San Fernando Electric Manufacturing Co., Inc. Method of making an inductor chip. 3,765,082, Cl. 29-602.000.

Zyrotron Industries, Inc.: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF OCTOBER, 1973

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Aisin Seiki Kabushiki Kaisha : *See*—
Ochiai, Chiaki, and Fujii. Re. 27,784.

Evans, Carlton F., to International Paper Co. Dunnage bag. Re. 27,787, 10–16–73, Cl. 214—10.50.

Fujii, Takashi : *See*—
Ochiai, Chiaki, and Fujii. Re. 27,784.

General Foods Corp. : *See*—
Rusoff, Irving I., Ohan, and Long. Re. 27,790.

International Paper Co. : *See*—
Evans, Carlton F. Re. 27,787.

Kobayashi, Hideya. Lightweight prestressed structural concrete member and method for manufacturing the same. Re. 27,785, 10–16–73, Cl. 52—228.

Long, Calvin L. : *See*—
Rusoff, Irving I., Ohan, and Long. Re. 27,790.

Lorenz, Howard A., R. H. Nagy, and I. Schousboe. Building systems. Re. 22,783, 10–16–73, Cl. 52—236.

Ochiai, Chiaki, and T. Fujii, to Aisin Seiki Kabushiki Kaisha. Master cylinder for hydraulic braking system. Re. 27,784, 10–16–73, Cl. 60—54.60.

Ohan, William J. : *See*—
Rusoff, Irving I., Ohan, and Long. Re. 27,790.

Nagy, Robert H. : *See*—
Lorenz, Howard A., Nagy, and Schousboe. Re. 27,783.

Roth, Wilfred. Detection apparatus. Re. 27,786, 10–16–73, Cl. 340—3.

Rusoff, Irving I., W. J. Ohan, and C. L. Long, to General Foods Corp. Protein food product and process. Re. 27,790, 10–16–73, Cl. 99—14.

Schousboe, Ingvar : *See*—
Lorenz, Howard A., Nagy, and Schousboe. Re. 27,783.

Tillman, Cassius L. Gate valve. Re. 27,789, 10–16–73, Cl. 251—327.

Wendt, David W. Motorbike. Re. 27,788, 10–16–73, Cl. 180—33.

LIST OF DESIGN PATENTEES

AB Gustavsbergs Fabriker : *See*—
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AFA Corp. : *See*—
Anderson, Douglas W. 228,657.

AMP Inc. : *See*—
Gekas, Nicholas G., and Cree. 228,659.

Ahrens, Claude W. Playground seesaw. 228,647, 10–16–73, Cl. D34—5.

American Optical Corp. : *See*—
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Anderson, Douglas W., to AFA Corp. Hand operated sprayer. 228,657, 10–16–73, Cl. D23—17.

Anderson, Eldon L., Jr., to General Electric Co. Luminaire. 228,667, 10–16–73, Cl. 48—31.

Banks, Dorothy M. : *See*—
Byerley, Darrell de Los, Banks, Kirwan, and Nelson. 228,652.

Barnard, W. Grover : *See*—
Barnard, William G., Jr., and W. G. Barnard. 228,698.

Barnard, William G., Jr., and W. G. Barnard, to Vita Mix Corp. Blender. 228,698, 10–16–73, Cl. D89—1.

Barrows, Robert E., to Chicago Pneumatic Tool Co. Pneumatic vibrator for detecting rattles. 228,672, 10–16–73, Cl. D55—1.

Beecher, William. Binocular. 228,676, 10–16–73, Cl. D57—1.

Bic Pen Corp. : *See*—
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Bich, Marcel L. M. Antoine., to Bic Pen Corp., mesne. Lighter. 228,666, 10–16–73, Cl. D48—27.

Bierbusse, James H., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,633, 10–16–73, Cl. D12—142.

Bierbusse, James H., to Uniroyal, Inc. Pneumatic tire tread and buttress. 228,634, 10–16–73, Cl. D12—143.

Binzer, Thomas J., C. H. Schmitt, P. H. Wooding, Y. Suganoya, and T. Miyake, to General Electric Co. Portable microwave oven or similar article. 228,607, 10–16–73, D7—128.

Blazey, Lawrence, D. Silverstrom, and E. Rocker, to Century Products, Inc. High chair with removable seat. 228,587, 10–16–73, Cl. D6—8.

Bloch, Jack, and V. Marchi, to Foster Grant Co., Inc. Spectacle front. 228,678, 10–16–73, Cl. D57—1.

Blount, Gerald F., to Peco, Inc. Tray. 228,606, 10–16–73, Cl. D7—37.

Bluestein, Bernard B., to Sunbeam Corp. Nozzle portion for a hair styling brush. 228,696, 10–16–73, Cl. D86—10.

Brom, Rebecca M. Type font. 228,683, 10–16–73, D64—12.

Brown, Dwight C. Bag closure or the like. 228,630, 10–16–73, D9—252.

Brubaker, Curtis M., H. B. Wykes, and R. T. Gerstenberger. Land vehicle body. 228,632, 10–16–73, D12—90.

Burris Industries, Inc. : *See*—
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Korch, Henning. 228,595.
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Byerley, Darrell de Los, D. M. Banks, P. T. Kirwan, and W. I. Nelson. Electronic mosquito repeller. 228,652, 10–16–73, Cl. D22—19.

Cannon, Lloyd M., and W. Taylor, to Ebco Manufacturing Co. Drinking water dispenser. 228,684, 10–16–73, D67—4.

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Chasteen, Keith, and P. S. Giovagnoli, to Wilco Water-Stills, Inc. Water distilling apparatus. 228,642, 10–16–73, Cl. D16—2.

Chicago Musical Instrument Co. : *See*—
Rendell, Stanley E. 228,673.

Chicago Pneumatic Tool Co. : *See*—
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Conner, James M., and J. M. Ryan, to Polaroid Corp. Motion picture camera. 228,680, 10–16–73, D61—1.

Construction Specialties, Inc. : *See*—
Zampetti, Patrick, and Duechler. 228,671.

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Mercadante, Ottorine N. 228,605.
Purpura, Peter J. 228,590.

Costabile, Eugene J., to Mohasco Industries, Inc. Chair. 228,592, 10–16–73, Cl. D6—39.

Covey, Laird F., to The Stanley Works. Drill guide. 228,612, 10–16–73, Cl. D8—14.

Cree, Boyd H. : *See*—
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Croyle, Jack V. : *See*—
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Swett, James B., and Croyle. 228,603.

Dallaire, Raymond M., to Plastiques P.H. (1972) Inc., P.H. Plastics (1972) Inc. Window lock. 228,617, 10–16–73, Cl. D8—111.

Dart Industries, Inc. : *See*—
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Swett, James B., and Croyle. 228,603.

Doggart, John, to V & S Friedland Ltd. Front cover of a wall chime. 228,689, 10–16–73, Cl. D72—1.

Dryden, Hugh L., Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of D. L. Kelly. Multi-stage aerospace craft. 228,688, 10–16–73, Cl. D71—1.

Duechler, Robert : *See*—
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Envall, Bjorn E. A., and R. E. Jonsson, to Saab-Scania AB. Wheel rim. 228,639, 10–16–73, Cl. D12—211.

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Ethyl Development Corp. : *See*—
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Falk, Sidney, to Fort Lock Corp. Lock. 228,618, 10–16–73, Cl. D8—113.

Falk, Sidney, and P. M. Trainor, to Fort Lock Corp. Lock. 228,619, 10–16–73, Cl. D8—113.

Fielder, Frederick W. Fishing lure. 228,654, 10–16–73, Cl. D22—29.

Fort Lock Corp. : *See*—
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Fortunoff Silver Sales, Inc. : *See*—
Gavette, Richard C. 228,610.

Foster Grant Co., Inc. : *See*—
Bloch, Jack, and Marchi. 228,678.

Frascone, Donald. Swimming pool chlorinator. 228,655, 10–16–73, Cl. D23—3.

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Gavette, Richard C., to Fortunoff Silver Sales, Inc. Fork or similar article of flatware. 228,610, 10–16–73, Cl. D7—137.
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Anderson, Eldon L., Jr. 228,667.
General Electric Co. : *See*—
Binzer, Thomas J., Schmitt, Wooding, Suganoya, and Miyake. 228,607.
Gerdjikian, Dikran. Rotary wheel adjusting apparatus for dressing a grinding wheel. 228,650, 10–16–73, Cl. D37—1.
Gerdjikian, Dikran. Lever adjusting apparatus for dressing a grinding wheel. 228,651, 10–16–73, Cl. D37—1.
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Gillette Co., The : *See*—
Hill, Robert L. 228,697.
Giovagnoli, Paul S. : *See*—
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Glaberson, Martin, to Warner-Lambert Co. Case for a safety razor and blade dispenser. 228,629, 10–16–73, Cl. D9—186.
Gomez, Francine, to Societe Le Foyer. Ink marker. 228,690, 10–16–73, Cl. D74—17.
Graham, Thelma I. Litter bag. 228,611, 10–16–73, Cl. D7—193.
Gramling, James T., to Gramling Tool & Die, Inc. Hydraulic punch. 228,682, 10–16–73, Cl. D63—1.
Gramling Tool & Die, Inc. : *See*—
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Hall, Merwin G. Height measuring scale. 228,670, 10–16–73, Cl. D52—6.
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Harris, Ewell J. Fish lure. 228,653, 10–16–73, Cl. D22—29.
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Hawkins, Paul M., and J. H. Lee, to Minnesota Mining and Manufacturing Co. Alarm latch. 228,620, 10–16–73, Cl. D8—131.
Healy, Howard G., to Medigenics Inc. Artificial kidney tank. 228,693, 10–16–73, Cl. D83—1.
Hilgendorff, Norman A. : *See*—
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Hill, Robert L., to The Gillette Co. Hair dryer. 228,697, 10–16–73, Cl. D86—10.
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129 3,765,931
132CF 3,765,932
132R 3,765,933
148 3,765,934
201 3,765,935
212 3,765,936
3,765,937
3,765,938
217 3,765,939
227 3,765,940

CLASS 119

1 3,765,371
3 3,765,372
14.04 3,765,373
18 3,765,374
96 3,765,375
106 3,765,376

CLASS 122

7C 3,765,377

CLASS 123

8.15 3,765,378
8.45 3,765,379
32EA 3,765,380
33VC 3,765,381
34A 3,765,382
41.32 3,765,384
41.5 3,765,383
41.84 3,765,385
119B 3,765,386
119R 3,765,387
139AC 3,765,388
142.5R 3,765,389
148E 3,765,390
3,765,391
196CP 3,765,393
196R 3,765,392
198F 3,765,394

CLASS 124

4 3,765,395
13R 3,765,396

CLASS 126

25R 3,765,397
110B 3,765,398
120 3,765,399
190 3,765,400

CLASS 128

1R 3,765,401
2F 3,765,402
2R 3,765,404
2V 3,765,403
2.05C 3,765,405
24R 3,765,406
33 3,765,407
80E 3,765,409
81A 3,765,410
84C 3,765,411
132 3,765,412
245 3,765,413
260 3,765,414
261 3,765,415
263 3,765,416
3,765,417
287 3,765,418
325 3,765,419
347 3,765,420
349R 3,765,421
352 3,765,408
594 3,765,422

CLASS 131

3 3,765,423
131 3,765,424
140P 3,765,425
176 3,765,426
178 3,765,427
196 3,765,428

CLASS 133

5A 3,765,429

CLASS 134

42 3,765,941
109 3,765,430
113 3,765,431
168R 3,765,432

CLASS 135

20A 3,765,434
20R 3,765,433

CLASS 136

26 3,765,942
27 3,765,943
83R 3,765,944
3,765,945
86C 3,765,946
120FC 3,765,947
146 3,765,948
153 3,765,949
158 3,765,950
176 3,765,951

CLASS 137

39 3,765,435
83 3,765,437
90 3,765,436
219 3,765,438
242 3,765,439
246.22 3,765,440
271 3,765,441
391 3,765,442
460 3,765,443
486 3,765,444
493 3,765,445
504 3,765,446
538 3,765,447
553 3,765,448
596.12 3,765,449
596.2 3,765,450
625.24 3,765,453
625.4 3,765,451
3,765,455
625.68 3,765,454
630.15 3,765,452

CLASS 138

89 3,765,456

CLASS 139

35 3,765,457
126 3,765,458

CLASS 141

20 3,765,459
98 3,765,460
234 3,765,461
301 3,765,462
388 3,765,463

CLASS 148

6.1 3,765,952
6.3 3,765,953
20.3 3,765,954
31.5 3,765,955
33 3,765,956
113 3,765,957
126 3,765,958
171 3,765,959
175 3,765,960
3,765,961
177 3,765,962
188 3,765,963

CLASS 149

2 3,765,964
7 3,765,965
18 3,765,966
21 3,765,967

CLASS 151

41.7 3,765,464
69 3,765,465

CLASS 152

210 3,765,466
219 3,765,467
352 3,765,468
415 3,765,469

CLASS 156

7 3,765,968
17 3,765,969
3,765,970
62.2 3,765,971
71 3,765,972
73 3,765,973
84 3,765,974
94 3,765,975
105 3,765,976
128 3,765,977
148 3,765,978
173 3,765,979
175 3,765,980
210 3,765,981
244 3,765,982
293 3,765,983
345 3,765,984
380 3,765,985
400 3,765,986
415 3,765,987
441 3,765,988
3,765,989
515 3,765,990
521 3,765,991
3,765,992
563 3,765,993

CLASS 161

6 3,765,994
18 3,765,995
39 3,765,996
141 3,765,997
170 3,765,998
3,765,999
3,766,000

CLASS 162

8 3,766,001
146 3,766,002
156 3,766,003

CLASS 164

252 3,765,471
274 3,765,470
282 3,765,472
325 3,765,473
344 3,765,474

CLASS 165

12 3,765,475
16 3,765,476
45 3,765,477
50 3,765,478
51 3,765,479
86 3,765,480
92 3,765,481

CLASS 166

106 3,765,482
254 3,765,484
265 3,765,483
285 3,765,485
290 3,765,486
301 3,765,487
308 3,765,488
310 3,765,489

CLASS 171

132 3,765,490

CLASS 172

189 3,765,491
266 3,765,492

CLASS 174

16B 3,766,306
47 3,766,307
68.5 3,766,308
102D 3,766,309
138F 3,766,310

CLASS 175

319 3,765,493
320 3,765,494
371 3,765,495
383 3,765,496

CLASS 176

1 3,766,004
19R 3,766,005
36R 3,766,006
56 3,766,007

CLASS 177

208 3,765,497

CLASS 178

6 3,766,311
6.8 3,766,312
7.2 3,766,313
7.3R 3,766,314
69.5R 3,766,315
3,766,316

CLASS 179

1AL 3,766,318
1GQ 3,766,317
1HF 3,766,319
5R 3,766,320
6R 3,766,321
15BV 3,766,322
16E 3,766,323
18E 3,766,324
84A 3,766,325
100.2R 3,766,329
100.2T 3,766,328
100.2Z 3,766,326
3,766,327
100.4C 3,766,330
107R 3,766,331
114A 3,766,332
115.5DV 3,766,334
115.5R 3,766,333
175.3 3,766,335
3,766,336
175.31R 3,766,337

CLASS 180

5R 3,765,498
8E 3,765,499
33R Re.27,788
77TC 3,765,500
79.2R 3,765,501
112 3,765,502

CLASS 181

24 3,765,503
31B 3,765,504
33K 3,765,505
44 3,765,506

CLASS 182

146 3,765,508
222 3,765,509
500 3,765,507

CLASS 187

29R 3,765,510

CLASS 188

26 3,765,511
71.8 3,765,512
71.9 3,765,513
72.4 3,765,514
79.5GE 3,765,515
85 3,765,516
138 3,765,517
352 3,765,518
366 3,765,519

CLASS 192

4A 3,765,520
35 3,765,521
111A 3,765,522

CLASS 194

4R 3,765,523

CLASS 195

1.8 3,766,008
29 3,766,009
30 3,766,010
31R 3,766,011
51R 3,766,012
63 3,766,013
66R 3,766,014
66 3,766,015
140 3,766,016

CLASS 198

59 3,765,524
208 3,765,525
217 3,765,526

CLASS 200

11R 3,766,338
24 3,766,339
30A 3,766,340
44 3,766,341
61.89 3,766,342
82B 3,766,343
85A 3,766,344
144B 3,766,345
153J 3,766,346
157 3,766,347
3,766,348
167A 3,766,349
3,766,350
168K 3,766,351
169R 3,766,352

CLASS 202

187 3,766,017
227 3,766,018

CLASS 203

7 3,766,019
26 3,766,020
39 3,766,021

CLASS 204

1T 3,766,022
38B 3,766,023
55R 3,766,024
67 3,766,025
72 3,766,027
105R 3,766,028
113 3,766,026
129.5 3,766,029
129.9 3,766,030
147 3,766,032
149 3,766,033
3,766,034
3,766,035
150 3,766,036
152 3,766,037
159.2 3,766,031
180P 3,766,038
180R 3,766,039
3,766,040
192 3,766,041
195C 3,766,042
207 3,766,043
268 3,766,044
275 3,766,045
297W 3,766,046
299 3,766,047
3,766,048
301 3,766,049
302 3,766,050
321 3,766,051

CLASS 206

44R 3,765,527
45.13 3,765,528
45.14 3,765,529
52F 3,765,530
60R 3,765,531

CLASS 208

45 3,766,052
47 3,766,053
89 3,766,054
92 3,766,055
111 3,766,056
143 3,766,057
210 3,766,058

CLASS 209

17 3,765,532
73 3,765,533

CLASS 210

19 3,766,059
64 3,766,060
169 3,765,534
274 3,765,535
446 3,765,536
3,765,537

CLASS 211

13 3,765,538
59 3,765,539
126 3,765,540
182 3,765,541

CLASS 214

1BB 3,765,545
1BT 3,765,542
1H 3,765,543
1P 3,765,544
6BA 3,765,546
10.5D Re.27,787
17DA 3,765,547
3,765,548
18N 3,765,549
77 3,765,550
82 3,765,551
83.26 3,765,552
138R 3,765,553
302 3,765,554
3,765,555

CLASS 219

10.61 3,766,353
77 3,766,354
121EB 3,766,355
208 3,766,356
300 3,766,357
322 3,766,358
388 3,766,359
415 3,766,360
521 3,766,361

CLASS 220

1.5 3,765,556
3 3,765,557
9F 3,765,558
15 3,765,559
46R 3,765,560
54 3,765,561
55.1 3,765,562
55.3 3,765,563
90 3,765,564

CLASS 221

46 3,765,565
129 3,765,566

CLASS 222

30 3,765,567
56 3,765,568
70 3,765,569
132 3,765,570
3,765,576
166 3,765,571
167 3,765,572
182 3,765,573
183 3,765,574
227 3,765,575
501 3,765,577
512 3,765,579
546 3,765,578

CLASS 223

52 3,765,580

CLASS 224

42.03B 3,765,581

CLASS 226

9 3,765,582
36 3,765,583
39 3,765,584
59 3,765,585
84 3,765,586

CLASS 227

100 3,765,587
113 3,765,588

CLASS 228

1 3,765,589
6 3,765,590
36 3,765,591

CLASS 229

2.5 3,765,592
17R 3,765,593
34HW 3,765,598
37 3,765,594
43 3,765,595
44R 3,765,596
62 3,765,597

CLASS 233

20A 3,765,599
20R 3,765,600
28 3,765,601
31 3,765,602

CLASS 234

34 3,765,603

CLASS 235

61E 3,766,362
61.11E 3,766,364
61.6R 3,766,363
92CT 3,766,365
133 3,766,366
150.2 3,766,367
151.11 3,766,368
3,766,369
156 3,766,370
175 3,766,371
3,766,372

CLASS 236

12R 3,765,604

CLASS 239

61 3,765,605
102 3,765,606
124 3,765,607
230 3,765,608
405 3,765,609
426 3,765,610

CLASS 240

8.3 3,766,373
10L 3,766,374
3,766,376
25 3,766,375
41.15 3,766,377

CLASS 241

18 3,765,611
23 3,765,612
251 3,765,613

CLASS 242

47 3,765,614
56R 3,765,615
56.5 3,765,616
79 3,765,617
84.1R 3,765,618
129.5 3,765,619

CLASS 244

1SA 3,765,621
3.24 3,765,620
17.11 3,765,622
53B 3,765,623
83R 3,765,624
110C 3,765,625
129D 3,765,626
147 3,765,627

CLASS 246

63C 3,766,378

CLASS 248

27 3,765,628
68CB 3,765,629
165 3,765,630
204 3,765,631
221 3,765,632
229 3,765,633
250 3,765,634
313 3,765,635
3,765,636
361A 3,765,637
363 3,765,638
399 3,765,639

CLASS 249

68 3,765,640
161 3,765,641

CLASS 250

199 3,766,392
3,766,393
205R 3,766,394
214R 3,766,395
252 3,766,383
266 3,766,388
283 3,766,381
324 3,766,382
343 3,766,380
360 3,766,387
395 3,766,379
3,766,386
403 3,766,391
427 3,766,396
432 3,766,397
446 3,766,384
468 3,766,385
499 3,766,389
3,766,390

CLASS 251

14 3,765,642
38 3,765,643
129 3,765,644
170 3,765,645
183 3,765,646
317 3,765,647
327 Re.27,789

CLASS 252

1 3,766,061
8.1 3,766,065
8.55D 3,766,063
8.7 3,766,062
25 3,766,064
32.7F 3,766,066
33 3,766,067
33.2 3,766,068
48.6 3,766,069
51.5A 3,766,070
3,766,071
62.1 3,766,072
62.54 3,766,074
62.9 3,766,073
104 3,766,075
156 3,766,076
180 3,766,077
186 3,766,078
188.3R 3,766,079
300 3,766,080
3,766,081
301.1R 3,766,082
301.2W 3,766,083
301.6F 3,766,084
309 3,766,085
312 3,766,086
348 3,766,087
412 3,766,088

3,766,089
413 3,766,090
431R 3,766,091
437 3,766,092
455Z 3,766,093
512 3,766,094
513 3,766,095
3,766,096
519 3,766,098
552 3,766,097

CLASS 254

47 3,765,648
106 3,765,649
133 3,765,650
167 3,765,652
186HC 3,765,651

CLASS 259

3 3,765,653
4 3,765,654
9 3,765,655
96 3,765,656

CLASS 260

2A 3,766,101
2.5BF 3,766,103
2.5FP 3,766,100
2.5E 3,766,099
2.5N 3,766,102
9 3,766,104
15 3,766,105
17A 3,766,106
17.4BB 3,766,107
23EP 3,766,109
23R 3,766,108
26 3,766,110
28 3,766,111
28.5B 3,766,189
28.5R 3,766,112
3,766,113
3,766,114
29.1SB 3,766,115
29.2N 3,766,117
3,766,118
3,766,119
29.6HN 3,766,116
29.6Z 3,766,120
29.7SO 3,766,121
30.4R 3,766,122
32.4 3,766,123
33.6AQ 3,766,124
33.6R 3,766,125
37SB 3,766,127
3,766,128
37N 3,766,126
40R 3,766,129
41AG 3,766,131
3,766,135
41A 3,766,130
3,766,132
41R 3,766,133
41.5A 3,766,134
45.7R 3,766,136
45.8A 3,766,137
47CZ 3,766,138
47UA 3,766,142
47XA 3,766,139
47C 3,766,140
47R 3,766,141
49 3,766,143
72R 3,766,144
75EP 3,766,145
75R 3,766,146
77.5AM 3,766,148
77.5R 3,766,147
78UA 3,766,294
78.5HC 3,766,149
79.3R 3,766,150
80.73 3,766,151
83.7 3,766,152
84.1 3,766,153
84.7 3,766,154
85.3R 3,766,155
86.1N 3,766,156
88.2R 3,766,158
92.8W 3,766,159
93.1 3,766,161
93.7 3,766,160
112R 3,766,162
191 3,766,163
205 3,766,164
209R 3,766,165
210.5 3,766,166
211R 3,766,167
211.5R 3,766,168
239BB 3,766,170
239BF 3,766,172
239.3B 3,766,169
239.55D 3,766,171
240TC 3,766,174
240R 3,766,173
243B 3,766,178
243C 3,766,175
3,766,176
3,766,177
244R 3,766,179
247.1 3,766,180
248NS 3,766,181
249.8 3,766,182
268SY 3,766,184
268TR 3,766,183
268N 3,766,185
279R 3,766,187
285 3,766,188
289QP 3,766,190
290V 3,766,191
293.6 3,766,192
294.8F 3,766,193
295CA 3,766,196
295R 3,766,195
295.5S 3,766,194
297P 3,766,197
299 3,766,198
3,766,199
302E 3,766,200
306.8R 3,766,201
308B 3,766,205
309 3,766,206
309.5 3,766,202
309.6 3,766,203
309.7 3,766,204
310C 3,766,207
327M 3,766,208
3,766,209
333R 3,766,210
340.9 3,766,211
343 3,766,212
343.2S 3,766,213
343.3 3,766,214
346.8 3,766,215
347.4 3,766,218
348A 3,766,220
348R 3,766,219
348.6 3,766,221
349 3,766,216
3,766,217
369 3,766,222
397.1 3,766,223
397.4 3,766,224
3,766,225
398.5 3,766,226
410.8 3,766,227
413 3,766,228
429K 3,766,229
438.1 3,766,230
439R 3,766,231
3,766,232
448A 3,766,234
448R 3,766,233
453R 3,766,235
455R 3,766,236
465E 3,766,240
465F 3,766,238
465R 3,766,239
465.3 3,766,237
465.8R 3,766,241
468G 3,766,242
470 3,766,243
471A 3,766,244
473A 3,766,246
473R 3,766,245
3,766,247
476C 3,766,248
476R 3,766,249
482C 3,766,250
486H 3,766,251
486R 3,766,252
488R 3,766,253
512R 3,766,254
513R 3,766,255
514 3,766,256
515A 3,766,259
515P 3,766,257
3,766,258
518R 3,766,260
3,766,261
520 3,766,263
3,766,264
530N 3,766,265
534C 3,766,266
554 3,766,268
561B 3,766,267
3,766,269
562N 3,766,270
563B 3,766,272
563R 3,766,271
583GG 3,766,273
584C 3,766,274
609R 3,766,275
624R 3,766,276
637P 3,766,277
638B 3,766,279
665R 3,766,280
3,766,281
666PY 3,766,282
3,766,283
3,766,284
668A 3,766,286
3,766,287
668B 3,766,288
668R 3,766,285
669R 3,766,289
672T 3,766,290
673.5 3,766,291
676 3,766,292
683R 3,766,278
683.5S 3,766,293
829 3,766,295
831 3,766,296
853 3,766,297
858 3,766,298
874 3,766,299
879 3,766,300
3,766,301
880R 3,766,157
884 3,766,302
927R 3,766,303

CLASS 261

37 3,765,657
41D 3,765,658
109 3,765,659

CLASS 264

269 3,766,186

CLASS 266

6R 3,765,660
23L 3,765,661
27 3,765,662
42 3,765,663
43 3,765,664

CLASS 269

27 3,765,665
37 3,765,666
59 3,765,667
208 3,765,668
254R 3,765,669

CLASS 270

58 3,765,670
71 3,765,671

CLASS 271

10 3,765,672

CLASS 272

57E 3,765,673
85 3,765,674

CLASS 273

1B 3,765,675
1.5R 3,765,676
96R 3,765,677
119R 3,765,678
131AD 3,765,679
134AC 3,765,680
134AE 3,765,681
134AF 3,765,682
198 3,765,683

CLASS 274

4E 3,765,685
4F 3,765,684

CLASS 276

11 3,765,686

CLASS 277

8 3,765,687
14 3,765,688
26 3,765,689
121 3,765,690

CLASS 279

71 3,765,691

CLASS 280

1.182 3,765,693
6R 3,765,692
11.35N 3,765,694
28 3,765,695
47.25 3,765,696
95R 3,765,697
96.2R 3,765,698
150AB 3,765,699
150SB 3,765,700
3,765,701
446B 3,765,702
477 3,765,703
482 3,765,704

CLASS 285

47 3,765,705
231 3,765,706
336 3,765,707
382.2 3,765,708

CLASS 290

38 3,766,398
40 3,766,399

CLASS 292

33 3,765,709
169.17 3,765,710

CLASS 294

77 3,765,711
87R 3,765,712

CLASS 296

3 3,765,713
23R 3,765,714
28G 3,765,715
137B 3,765,716
3,765,717

CLASS 297

17 3,765,718
170 3,765,719
330 3,765,720
460 3,765,721

CLASS 299

2 3,765,722
34 3,765,723
39 3,765,724
56 3,765,725

CLASS 300

21 3,765,726

CLASS 302

14 3,765,727

CLASS 303

1 3,765,728
13 3,765,729

CLASS 305

10 3,765,730
35EB 3,765,731

CLASS 307

10AT 3,766,400
43 3,766,401
44 3,766,402
66 3,766,403
116 3,766,404
133 3,766,405
203 3,766,406
223C 3,766,408
223 3,766,407
235A 3,766,411
252T 3,766,409
255 3,766,410
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D02—	31	228,582	244	228,601	229	228,622		228,642		228,651	D61— 228,680
	234	228,583	D07— 1	228,605	235	228,623	D18—	228,643	D44— 15	228,604	228,681
		228,584	15	228,603	248	228,624		228,644	D47— 6	228,663	D63— 228,682
D04—	17	228,585	37	228,606	D09— 1	228,625	D22—	19 228,652	D48— 20	228,664	D64— 12 228,683
	24	228,586	107	228,609	10	228,626		29 228,653		228,665	D67— 4 228,684
D05—	2	228,649	128	228,607	156	228,627		228,654	27	228,666	228,685
D06—	8	228,587	131	228,602	172	228,628	D23—	3 228,655	31	228,667	D70— 1 228,687
	20	228,588	137	228,610	186	228,629		4 228,656	32	228,668	2 228,686
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	39	228,591	D08— 14	228,612	90	228,632	D26—	228,659	D54— 2	228,671	D74— 17 228,690
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3,765,419	3,765,776	3,766,318	3,765,557	3,765,670	3,765,197
3,765,440	3,765,880	3,766,325	3,765,737	3,765,694	3,765,374
3,765,442	3,765,948	3,766,327	3,765,801	3,765,708	3,765,416
3,765,443	3,766,042	3,766,388	3,765,808	3,766,000	3,765,524
3,765,463	3,766,052	3,766,411	3,766,141	3,766,008	3,765,525
3,765,483	3,766,053	3,766,457	3,766,196	3,766,123	3,765,529
3,765,486	3,766,055	3,766,526	3,766,250	3,766,384	3,765,531
3,765,494	3,766,118	49 : 3,765,302	3,766,483	54 : 3,765,280	3,765,559
3,765,495	3,766,119	3,765,648	3,766,493	3,765,368	3,765,565
3,765,508	3,766,179	3,765,967	3,766,539	3,765,739	3,765,633
3,765,558	3,766,198	50 : Re.27,786	53 : 3,765,119	3,765,836	3,765,667
3,765,560	3,766,229	3,765,411	3,765,131	3,766,116	3,765,699
3,765,607	3,766,269	3,765,542	3,765,314	3,766,435	3,765,989
3,765,642	3,766,277	51 : 3,765,182	3,765,322	55 : Re.27,783	3,765,997
3,765,647	3,766,283	3,765,187	3,765,367	Re.27,788	3,766,310
3,765,692	3,766,285	3,765,195	3,765,403	3,765,066	
3,765,713	3,766,287	3,765,510	3,765,497	3,765,105	
3,765,747	3,766,290	3,765,555	3,765,628	3,765,120	
3,765,763					

Design Patents

6 :	228,588	17 :	228,589	22 :	228,670		228,673	36 :	228,590	39 :	228,587
	228,599		228,592	25 :	228,583	27 :	228,582		228,604		228,685
	228,608		228,601		228,584		228,620		228,605		228,698
	228,611		228,609		228,586		228,683		228,624	41 :	228,606
	228,626		228,615		228,674	29 :	228,642		228,627	42 :	228,593
	228,632		228,618		228,675	33 :	228,610		228,629		228,659
	228,645		228,619		228,678		228,693		228,631		228,669
	228,652		228,623		228,679	34 :	228,598		228,650	44 :	228,602
	228,658		228,657	26 :	228,628		228,643		228,651		228,603
	228,660		228,676		228,633		228,644		228,655	45 :	228,640
	228,686		228,696		228,634		228,646		228,672	48 :	228,654
	228,695		228,697		228,635		228,648		228,680		228,691
8 :	228,625	18 :	228,591		228,636		228,656		228,681	49 :	228,597
	228,692	19 :	228,647		228,637		228,664		228,684	51 :	228,630
9 :	228,612	20 :	228,677		228,638		228,665		228,687		228,649
11 :	228,688		228,682		228,653		228,671	37 :	228,667	55 :	228,668
12 :	228,694	21 :	228,607								

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*